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March 9, 1999

HAND DELIVERED ON MARCH 10, 1999

Muthu Sundram, Esq.
Assistant Regional Counsel
Office of Regional Counsel
U.S. Environmental Protection Agency
Region II
290 Broadway, 17th Floor
New York, NY 10007-1866

Re: LCP Chemical Site, Linden, New Jersey

Dear Muthu:

As you have informed me, the U.S. Environmental Protection Agency (EPA) considers Praxair, Inc. (Praxair) a potentially responsible party under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as a former operator at the LCP Chemical Site (Site), a NPL site, and the EPA intends to issue a unilateral administrative order to Praxair requiring it to perform a Remedial Investigation and Feasibility Study. We understand that EPA's position arises from Union Carbide Corporation's (UCC) operation of a hydrogen facility on a 2.1 acre former leasehold (Leasehold) at the Site for over thirty years. See Attachment 1. Praxair, Inc. has assumed the obligations, if any, of UCC at this Site and, as well, as a successor to Liquid Carbonic Carbon Dioxide Corporation (LCCD), has assumed the liabilities of LCCD, if any, for its carbon dioxide distribution terminal activities on a part of this Leasehold for approximately six years beginning in 1988. LCCD parked 6-7 trucks at its terminal area and stored carbon dioxide, not a hazardous substance under CERCLA, at its terminal. As Praxair's June 12, 1998 letter in response to EPA's information request states, Praxair has no information nor, to our knowledge does EPA have any information, regarding the

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release of any hazardous substances by LCCD at, under, or around the leased terminal area or at the Site.

This letter is intended to persuade the EPA not to issue an administrative order to Praxair because UCC's, Praxair's, and LCCD's activities on the small, discrete Leasehold at the 26 acre Site: (1) did not contribute to the Site's hazardous substances requiring any response actions under CERCLA; and (2) even if any CERCLA response actions may be legally required by the EPA to be undertaken at the Leasehold by Praxair, such actions are limited by CERCLA and relevant case law to only the former Leasehold.

I. Summary of the Facts Regarding Activities at the LCP Chemical Site

A. Union Carbide Corporation Hydrogen Plant Operations

As Praxair has stated in its May 5, 1998 response to EPA's section 104(e) request, UCC, beginning in 1957, operated a hydrogen transfill and repackaging plant on the Leasehold. LCP Chemicals & Plastics, Inc. (LCP) was the lessor for virtually the entire duration of the various leases. In 1988, UCC transferred ownership of its hydrogen plant to Linde Gases of the Mid-Atlantic, Inc., a subsidiary of Union Carbide Industrial Gases Inc., now known as Praxair, Inc. Union Carbide Industrial Gases Inc. was a wholly owned subsidiary of UCC and was spun-off, as Praxair, Inc., from UCC as a separate corporation, unaffiliated with UCC. Operations at the hydrogen plant ceased in May 1990.

B. UCC Cleanup of Hydrogen Plant Facility - Decontamination Project

In the late 1980's, in anticipation that the hydrogen plant operations might be relocated, UCC began planning the investigation and remediation of the hydrogen plant

buildings and equipment. Remediation of the hydrogen plant facilities was needed to address mercury contamination caused by LCP's chlorine production operations. During the hydrogen plant operations, LCP transferred to UCC, via pipeline, unpurified hydrogen gas. The hydrogen gas was tainted with mercury because of LCP's chlor-alkali production operations. UCC purified the hydrogen prior to containerizing the hydrogen gas for sale. Over many years, however, the process of hydrogen gas purification contaminated UCC's leasehold buildings and some equipment with mercury. This hydrogen gas transfer and mercury removal process terminated in 1980, yet the residual mercury needed to be removed from UCC's buildings and equipment.

In 1987 UCC estimated that a staged cleanup could be accomplished by 1990. The eventual cleanup cost was over \$600,000. This extraordinary cost represents, inter alia, the work needed to decontaminate mercury from the walls, floors, ceilings, and roofs of buildings which were dismantled and removed from the Leasehold. Waste materials from this activity were disposed of, in accordance with law, at SCA Chemical Services, Inc. at Model City, NY. Mercury collected from this cleanup was transported and manifested to Bethlehem Apparatus in Hellertown, PA. In 1987 UCC excavated soil contaminated with used oil and mercury and manifested the waste to Envirosafe Services of Ohio in Oregon, OH. The New Jersey Department of Environmental Protection approved the excavation and cleanup. Attachment 2 is an April 22, 1988 letter from International Technology Corporation, UCC's environmental consultant, detailing the cleaning, and mercury removal, from an air compressor at the Leasehold.

C. UCC Cleanup of the Leasehold under the New Jersey Environmental Cleanup Responsibility Act and the Industrial Site Recovery Act

In May 1990 Linde Gases of the Mid-Atlantic (Linde) submitted a Site Evaluation Submission (SES) under New Jersey's Environmental Cleanup Responsibility Act

(ECRA) to the New Jersey Department of Environmental Protection & Energy (NJDEPE). The SES was submitted in accordance with State law since Linde was terminating its lease with LCP. In the next four (4) years Linde (Praxair, as of July 1992) with the assistance of the International Technology Corporation, undertook extensive soil, subsoil, and groundwater investigations, soil excavation, and other remediation to satisfy ECRA requirements.

Specifically, soil sampling and analysis was completed in June 1990 and June 1991. Additionally, remedial excavations and soil sampling and analysis were completed in April 1992. Groundwater sampling and analysis were performed in June 1991, July 1991, and April 1992. The results of the soil and groundwater sampling and analysis, prior to July 1991, were provided to the NJDEPE in two separate *Remedial Investigation Reports* in March 1991 and July 1991. The results of the July 1991 and April 1992 groundwater sampling and analysis and the April 1992 remedial excavations were provided to the NJDEPE in the May 1992 *Remedial Investigation Report*.

On November 24, 1992, Praxair met with the NJDEPE to discuss future remediation, if any. The parties agreed that capping of the unpaved areas of the Leasehold would provide a cost-effective and environmentally sound remedial option, in accordance with state law, for this case. In February 1993, Praxair submitted the ECRA Cleanup Plan based upon the conclusions reached with the NJDEPE during the November 1992 NJDEPE meeting. The draft NJDEPE Cleanup Plan approval letter was received by Praxair in September 1993 and responded to with comments in October 1993. Following the NJDEPE Cleanup Plan/Remedial Action Workplan approval in April 1994, the remedial capping and related activities were implemented in April 1994. Praxair's Remedial Action Report was filed in June 1994 (Attachment 3).

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The NJDEPE provided its final approval letter to Praxair, signifying achievement by Praxair of the state of New Jersey's legally applicable and relevant and appropriate requirements, on June 20, 1995 (see Attachment 4) and a Declaration of Environmental Restrictions was made as of September 23, 1994 (Attachment 5). Attachment 6 is a September 28, 1994 letter from International Technology Corporation to Praxair providing a cost estimate for remediation of the Leasehold to NJDEPE residential cleanup criteria. The cost was \$1,480,005, over 80% of which was based on excavation of the contaminated fill material provided by GAF prior to UCC's Leasehold. Since the historic contaminated fill was not provided by UCC, the NJDEPE did not require that Praxair excavate it. Because the Leasehold was also surrounded by hundreds of acres of contaminated industrial property, NJDEPE, correctly, did not apply its residential cleanup criteria. Instead, the NJDEPE applied the attached Soil Cleanup Criteria (Attachment 7) which were achieved by Praxair.

Extensive documentation of Linde's and Praxair's cleanup activities were provided to the EPA as attachments to Praxair's May 5, 1998 response to EPA's information request under CERCLA.

D. CERCLA History of the LCP Chemicals, Inc. Superfund Site

1. EPA's Site Assessments Identify No Hazardous Substances from UCC, Praxair, or LCCD.

As a result of a verbal request in January 1996 from the Pre-remedial Section of the Surveillance and Monitoring Branch, EPA, Region II, the Removal Action Branch (RAB) engaged in a Removal Site Evaluation of the LCP property. As the August 12, 1996 "Removal Site Evaluation for LCP Chemicals, Inc." from Mr. Nick Magriples, On-Scene Coordinator for the RAB, states on page 1, "the request was

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focused on the former lagoon area.” The former lagoon area was never a part of the Leasehold and is found approximately six hundred feet, “as the crow flies”, east and north of the nearest edge of the former Leasehold. At least five sets of railroad tracks, several buildings, and a few roads separate the lagoon from the Leasehold. We have found no documents in the EPA’s administrative records of the Site, nor are we aware of any documents, indicating that there (1) was or is any physical nexus between the lagoon and the Leasehold; or (2) were any transshipments of any hazardous substances or any waste materials from the Leasehold to the lagoon or any other portion of the Site. The lagoon area was used by General Aniline and Film Corporation (GAF) and LCP for many years for the disposal of various hazardous substances.

The Removal Action Branch’s activities, understandably, centered on the lagoon, or impoundment, and neighboring buildings and facilities used by GAF and LCP. Apparently, neither the Removal Action Branch nor the EPA pre-remedial contractor (1995) nor any other EPA representative, ever sampled the former Leasehold or concluded that any contamination existed at or emanated from the Leasehold that required response actions under CERCLA. Moreover, Figure 2 to that Evaluation identifies *only* the “Chem-Fix Test Lagoon” and “Brine Sludge Lagoon” and adjacent facilities. The Leasehold is hundreds of feet away and not even in the diagram.

Mr. Magriples concluded in his August 1996 memorandum that the LCP Chemicals, Inc. property was not eligible for a CERCLA Removal Action. He concluded by stating that “there are no completed or anticipated human exposure pathways associated with the Site under present conditions.” In 1998 EPA conducted another on-site investigation and confirmed its prior conclusion that conditions at the site did not require a removal action under CERCLA.

In February 1997 EPA issued its final Hazard Ranking System Evaluation for the LCP Chemicals, Inc. site. The evaluation concluded that there were no exposure pathways of contaminants from the Site for groundwater, soil or air. *The sole basis for listing the Site was the potential exposure to people and the environment via a surface water pathway from the lagoon and nearby areas to South Branch Creek.* Neither UCC nor LCCD ever discharged any wastewater, other liquids, or any other substances or materials to the South Branch Creek and we have found no documents in the EPA administrative record for this Site indicating any known or suspected nexus to the lagoon or South Branch Creek or any surface water from the former Leasehold during the tenancy of UCC or LCCD.

2. EPA's Site Assessment Identifies LCP, GAF as Sources of Hazardous Substances

The following is a very brief summary of what EPA concluded about the hazardous substances, and their sources, at the LCP Site. The Site, which occupies 26 acres on filled marshland in an industrial area, is bordered by South Branch Creek to the east, GAF Corporation to the north, and Northville Industries, BP Corporation, and Mobil to the northeast, south, and west, respectively. South Branch Creek, a tributary to the Arthur Kill, flows through a portion of the Site via engineered conveyance structures on the north side of the property. GAF purchased the land from the U.S. Government in 1950, filled an area of marshland and lowland, and developed it. GAF produced chlorine (using mercury cell electrolysis) and sodium hydroxide at this location from 1952 to 1972. LCP Chemicals Inc. (a subsidiary of the Hanlin Group, Inc.) of Edison, New Jersey purchased the property from GAF in 1972 and continued to produce chlorine until 1985, when production at the plant ceased permanently. Sludge containing mercury from the chlorine production process was discharged to a brine sludge lagoon (the lagoon referred to above) located on the property.

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In 1981, the New Jersey Department of Environmental Protection ("NJDEP") entered into an Administrative Consent Order with LCP Chemicals, Inc. This Consent Order called for the closure of the brine sludge lagoon and implementation of air, soil, and groundwater monitoring. Analytical results from soil samples collected in 1982 by LCP Chemicals, Inc., revealed elevated levels of mercury at 0-2 feet in depth, with concentrations ranging from 36 milligrams per kilogram (mg/kg) to 772 mg/kg. Surface soil samples collected from the perimeter of the lagoon at that time indicated mercury levels ranging from 27 mg/kg to 1,580 mg/kg. These results are summarized in a February 1982 report, prepared by Geraghty & Miller, Inc. for LCP Chemicals, Inc., entitled *Waste Lagoon Ground-Water Monitoring*. In January 1995, EPA collected several surface soil, surface water, and sediment samples during a pre-remedial investigation, *none of which came from the Leasehold*. The average concentration of mercury in the sediments downstream of South Branch Creek, which flows east, away from the Leasehold, was 500 mg/kg, with the highest concentration being 1,060 mg/kg. Mercury was detected in the surface water at 93 micrograms per liter near the facility's outfall. Arsenic was also present in most of the samples. Arsenic concentration in the surface water and sediment were 336 mg/l and 318 mg/kg, respectively. Zinc (maximum concentration, 833 mg/kg) and lead (maximum concentration, 304 mg/kg) were also noted in these samples. These results are summarized in a June 1995 report entitled *Final Draft Site Inspection, LCP Chemicals, Inc.*, prepared by Malcolm Pirnie, Inc. for the EPA.

Leaching of contaminants into South Branch Creek is ongoing. The flow of contaminants into the Arthur Kill has not been defined as of yet. There is a potential for acute effects to aquatic biota for the length of South Branch Creek, and contamination could be introduced into the food chain via aquatic species present in the creek.

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On July 27, 1998, the Site was placed on the National Priorities List ("NPL").

Through the years, there have been several documented significant releases at the Site. Overflows of supernatant material from the brine sludge lagoon to the South Branch Creek were observed by the NJDEP in 1972 and 1974. In 1975, a brine recycle pump failed and a breach in the brine sludge lagoon occurred. In 1979, a sodium chloride solution contaminated with inorganic mercury overflowed from the process and the wastewater system, resulting in a release of an estimated 10,000 to 20,000 gallons of this material into South Branch Creek. Releases from piping near a 500,000 gallon tank located on the property were observed in 1980, 1981, and 1982. The volume and nature of the released liquid are unknown.

None of the above facts and conclusions, all stated by the EPA in its draft Administrative Order on Consent for Remedial Investigation and Feasibility Study, relate to any activities or operations that occurred on the Leasehold or were undertaken by UCC, Linde, Praxair, or LCCD. Rather, the facts and conclusions relate solely to operations of the past owners of the Site and operators of the chlorine manufacturing operations.

In addition, during Hanlin Group, Inc.'s ownership of the Site, which began in 1972 according to its June 3, 1998 response to EPA's information request, Hanlin operated the mercury cell process for about ten (10) years and filled the lagoon "with mercury-contaminated hazardous waste generated from the chlor-alkali operations. The lagoon ...contained about 30,000 cubic yards of waste, and covered 1.5 acres. The disposal of brine muds was terminated in March 1982. The plant's waste lines were flushed to the lagoon..." The contents of an adjacent lagoon, containing wastes treated by experimental chemical fixation, were transferred to the brine sludge lagoon.

GAF purchased the land in 1950, filled the marshland with metals-contaminated soil, and developed it. From 1964 to 1972, GAF produced chlorine (using mercury cell electrolysis) and sodium hydroxide in buildings and facilities adjacent to South Branch Creek and across the street from the two lagoons.

For over one hundred years GAF has operated other facilities on a 125 acre parcel immediately north and northeast of the Site, its property boundary being less than 100 feet from the South Branch Creek located at the LCP Site. GAF was responsible for filling the marshland on this extensive parcel, as well as virtually the entire LCP Site, with fill material which contained heavy metals, including arsenic. Praxair identified GAF as the source of this material in a September 30, 1992 letter to Mr. Joseph Goliszewski of the New Jersey Department of Environmental Protection and Energy. See Attachment 8 and its attachments. Praxair had obtained the documentation supporting these conclusions from NJDEPE'S own files. ISP Environmental Services Inc., by its admission, is the successor to GAF Corporation with respect to the LCP Chemical Site.

Neither UCC, Linde, Praxair, nor LCCD was in any way responsible for the fill, which also contained slag, crushed stone, and brick, used by GAF prior to UCC's and LCCD's leases on the Site. There is no documentation in EPA's administrative record of the Site or in the NJDEPE's records demonstrating that UCC, Linde, Praxair, or LCCD was in any way responsible for this historical fill containing heavy metals -- the same heavy metals identified by EPA in its Site-related investigations. The arsenic found in Geraghty & Miller's RCRA Facility Assessment performed for LCP in 1992 may, for example, have been derived from this fill material.

II. Why EPA Should Not Issue a CERCLA Administrative Order to Praxair

A. EPA's Policy on Issuance of CERCLA §106 Orders

On January 31, 1990 EPA issued its "Guidance on CERCLA §106(a) Unilateral Administrative Orders for Remedial Design and Remedial Action" (Guidance). The Guidance superseded EPA's September 8, 1983 "Guidance Memorandum on Use and Issuance of Administrative Orders Under §106(a) of CERCLA". As the new title suggests, the Guidance evidences a narrowing of preferences for the use of unilateral administrative orders in the remedial process -- to compel the conduct of remedial designs or remedial actions, but impliedly not remedial investigation or feasibility studies. EPA directly confirms this preference by stating, on p. 6, n. 11, "Agency policy favors use of consent orders for RI/FSSs" and refers the reader to OSWER Directive number 9835.19 ("Administrative Order on Consent for Remedial Investigation/Feasibility Study").

In paragraph II of the Guidance, the EPA states that the objective of Superfund enforcement is to "place ultimate responsibility for the costs of cleaning up Superfund sites on those who contributed to the problem". At the LCP Chemical Superfund Site, the only "problem" identified by the EPA's administrative record was created by companies other than UCC, Linde, Praxair, or LCCD.

The Guidance also provides that "before the order may be issued, the affected state must be notified." While we do not know whether the NJDEPE was advised of the EPA's intent to issue Praxair a unilateral administrative order, we believe that consultation with the NJDEPE would provide additional information to the EPA supporting Praxair's position that no order - or other enforcement action - should be taken

against Praxair. The NJDEPE intensively oversaw and approved Praxair's cleanup at the Site and can offer additional first-hand knowledge of the investigation and remediation undertaken at the Leasehold. The cleanup satisfied environmental laws of the state of New Jersey and should satisfy CERCLA's requirements. The EPA has not provided Praxair with any "legally applicable or relevant and appropriate" requirements under CERCLA that have not already been met by Praxair's remediation at the Leasehold. While the EPA has maintained that Praxair, as an "operator" under Section 107(a) of CERCLA, is jointly and severally liable for response actions at the Site, we submit that such an interpretation of "operator" status is unwarranted under the facts of this matter and that, even if Praxair were an "operator", relevant case law regarding divisibility of harm restricts Praxair's liability, if any, to the Leasehold.

Given the facts in Section I, and EPA's policy disfavoring issuance of unilateral administrative orders for performance of Remedial Investigations and Feasibility Studies, the EPA should not issue Praxair an order but await receipt of data, if any, attributing any future response actions, to UCC's or Praxair's operations.

B. The Former UCC/UCIG Hydrogen Plant Activities Do Not Give Rise to Operator Liability Under CERCLA

1. "Facility"

We have been unable to determine from the EPA administrative record why the EPA decided to define the "facility" or "Site" as the entire 26 acres owned by LCP. The effect of this convenient designation, of course, is to sweep within the coverage of CERCLA all operations at this Site, regardless of the discreteness of the activities, business ownership, or the absence of any harm attributed to such businesses. Recently, the United States Court of Appeals for the Sixth Circuit addressed the

designation of a "facility" under CERCLA. In *U.S. v. Township of Brighton*, 153 F.3d 307 (6th Circ. 1998), the Court considered the claims of the Township that it was responsible for only wastes in a three-acre corner of a larger landfill (the "facility") and that it should not be considered a section 107(a) "operator" of the much larger landfill, or CERCLA "facility". While the Court rejected the Township's claims that the three acres on which it disposed of wastes was not part of the "facility", the reasoning of Judge Moore, concurring, is noteworthy. Only because the landfill in question "operated as a single landfill", was it considered a "facility". Because the District Court record contained evidence of transshipment of waste from the three acre portion to the other portions of the "facility", and the landfill had no discrete boundaries within it, the entire landfill was held to be the "facility". The clear implication of this decision is that a discrete area of a "facility" could be "carved out" from the "facility's" jurisdiction and, therefore, not be subject to CERCLA coverage at all. Judge Dowd, dissenting, explicitly recognized this. He found that there were insufficient facts on which to hold that the property was not naturally divided into separate corners and concluded that the "facility" should not have included the Township's dumping area.

At LCP, there are no "insufficient facts" regarding segregation of activities. The Leasehold, by operation of law, was separate from the chlor-alkali operations and related operations at GAF and LCP which triggered NPL listing of the Site. There are no allegations of transshipment from the Leasehold to the rest of the Site. No facts exist, or are even suggested, that operations at the Leasehold contributed to listing of the Leasehold portion of the Site on the National Priorities List. Moreover, the contamination arising from Leasehold operations were remediated in accordance with New Jersey state law and the entire Leasehold capped and paved.

2. Divisibility of Harm

The law in the Third Circuit of the federal courts is settled on the issue of whether divisibility of harm can trump the government's claim of joint and several liability under CERCLA. It can. In *U.S. v. Alcan Aluminum Corp.*, 964 F. 3d 252 (3rd Circ. 1992), the court held that the common law principles of joint and several liability provide a necessary balance between a PRP's and the government's conflicting interests and inject fairness into the CERCLA statutory scheme. Relying on the Restatement (Second) of Torts, Section 433A, the court found that damages among joint tortfeasors causing distinct harms or a single harm should be apportioned where: 1) there are distinct harms; or 2) there is a reasonable basis for determining the contribution of each cause to a single harm. Assuming *arguendo* there is some harm attributable to Leasehold operations, it is clearly distinct and reasonably capable of being apportioned, as it is required to be by the *Alcan* court. While the alleged tortfeasor, Praxair here, carries the burden of establishing that the damages are capable of apportionment, Praxair has already met this burden. As the EPA's administrative record justifying placement of the Site on the NPL demonstrates, no harm has been attributed to Leasehold activities. To the extent that Praxair's response to EPA's information request identified prior Leasehold contamination, such contamination has already been cleaned up (as demonstrated by the NJDEPE records and attachments to this letter and Praxair's May 5, 1998 response to EPA's information request), the Leasehold has been capped by Praxair, and approval obtained by the state of New Jersey. In any event, with respect to contamination, if any, that EPA may reliably assert arose from Leasehold activities, none of it was transferred off the Leasehold to other parts of the Site, and EPA has no basis for reasonably alleging that environmental conditions on the former Leasehold require any response action under CERCLA.

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We recognize, as the *Alcan* court noted, that at the typical Superfund site, e.g., a landfill where waste from dozens of generators has been mixed, determination of divisibility may require an "intensely factual" analysis. However, unlike the facts of that case, there was no commingling of wastes from the Leasehold with wastes on the other 24 acres at the Site; indeed, there were discrete and entirely separate business activities with no use by UCC, Linde, Praxair, or LCCD of other portions of the Site. Unlike Alcan at the Butler Tunnel Site, moreover, Praxair has expended hundreds of thousands of dollars to clean up the Leasehold. Prior to being determined liable and compelled by an order to investigate property already subject to extensive investigation and remediation, Praxair should be provided evidence of its contamination which requires response action under CERCLA.

As the Court held, "Alcan should be permitted this opportunity to limit or avoid liability. If Alcan succeeds in the endeavor, it should only be liable for that portion of the harm fairly attributable to it." *U.S. v. Alcan Aluminum Corp.*, 964 F.2d at 269. If the EPA were to issue a unilateral administrative order to Praxair, the Agency would contravene the mandate of the Third Circuit. Prior to having rebutted Praxair's and the state's conclusion, abundantly supported, that no further response action is needed arising from Leasehold activities, the Agency would have determined Praxair's liability under CERCLA. The *Alcan* court, in its analysis of causation, specifically rejected this approach. It injected causation into the equation. The Agency cannot and should not, by simply reciting the CERCLA "operator" mantra, order Praxair to investigate - or remediate - contamination on any part of the Site without relevant evidence that Leasehold activities have contributed or will contribute to CERCLA response costs. *Id.* at 270. See also *United States v. Township of Brighton*, 153 F. 3d 307, 318 ("[N]o causation means no liability, despite § 9607(a)'s strict liability scheme."); *United States v. Alcan Aluminum Corp.*, 990 F. 2d 711, 722 (2d Circ. 1993); *In re Bell Petroleum*

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Services, Inc., 3 F. 3d 889, 901 (5th Cir. 1993) (“with respect to the timing of the “divisibility” inquiry, we believe that an early resolution is preferable.”)

EPA should order those persons responsible for the actual unremediated hazardous substances releases, and the threat of future releases, at the Site to investigate whether any additional cleanup at the Site is required. Then, if potential response costs can be attributed to Leasehold activities, EPA may fairly and properly consider whether to order Praxair to engage in additional response actions.

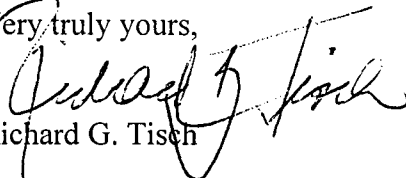
Even if apportionment were a challenging task (although we believe the Site presents little difficulty for the EPA in isolating Leasehold “harm”, if any), the Courts have required the EPA to engage in this apportionment. (“The fact that apportionment may be difficult, because each defendant’s exact contribution to the harm cannot be proved to an absolute certainty, or the fact that it will require weighing the evidence and making credibility determinations, are inadequate grounds upon which to impose joint and several liability.”) *Id.* at 903.

The EPA has undertaken no investigation regarding environmental conditions at the Leasehold portion of the Site. The information it possesses regarding such conditions was developed by UCC and Praxair and sets forth extensively the investigation and remediation, over a period of at least seven years, completed at the Leasehold. The NJDEPE has approved the cleanup. The Leasehold has been entirely paved, and no contamination there is known to exist requiring any response actions under CERCLA. But for the overly broad “facility” or Site designation under CERCLA by EPA, -- a designation apparently based upon the convenience of property ownership and not the reality of environmental contamination -- the Leasehold would not have been part of the Site.

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The known Site contamination, which caused the property to be placed on the National Priorities List, was created by GAF and LCP. The historic metals-contaminated fill was placed by GAF over the entire Site down to a level of 4-5 feet and prior to UCC's operations. The NJDEPE records confirm that GAF was responsible for this fill. Its successor, ISP Environmental, and LCP bear the liability for investigation and remediation of the Site since they are the companies (or, as the case may be, a successor to the company) responsible for owning and operating the Site and disposing the hazardous substances triggering response costs. Neither UCC, Linde, Praxair, nor LCCD is one of these companies, and Praxair should not, as the Courts have held, be ordered to perform response actions for harm unattributed to it.

Therefore, Praxair respectfully requests that the EPA not issue a unilateral administrative order to Praxair requiring it to perform any response activities with respect to the Site. Should you or Patricia Simmons have any questions with respect to this submission, please call me.

Very truly yours,

Richard G. Tisch

RGT/jm
Enclosures

cc: Patricia Simmons, EPA

MEMO

DEPARTMENT OF E.

NMENTAL PROTECTION

TO Scott SantoraFROM Walter OlenickDATE 1/13/82SUBJECT GAF - Linden

As we discussed, I am submitting data regarding toxic contamination at the subject company site with a brief discussion outlining the contaminants which were discharged.

1. The Special Sewer area highlighted in red was used for the discharge of arsenic acid residues from Building #46. The line went overhead approximately 300' over a trestle over the railroad tracks and was discharged in the low lying marsh area. This overflowed to the other red highlighted area to the west. The westerly area was inundated by the tidal flow flowing Piles Creek and toxic materials flowed back and forth with the tides (a sort of reflux action).

Arsenic acid residues result from the amination (using ammonia) of sulfonated anthraquinones in the presence of arsenic acid under pressure in an autoclave. On completion of the amination, pressure is reduced by blowing off unreacted ammonia (which is condensed and recycled to subsequent batches), followed by dilution with water and filtration of the product. Spent arsenic acid in the filtrate were discharged via the Special Sewer line to the Special Sewer Area.

If process details of this reaction procedure are required, this can be made available from U.S. Government Printing Office documentation obtained in post World War II process studies conducted by several teams at the I.G. Farben plants in Germany. GAF formerly was owned by I.G. Farben.

In addition to arsenic wastes, iron sludges were also directed to the Special Sewer Area via the Special Sewer line.

2. Among products manufactured in Building #49, were the alpha sulfonated anthraquinones. See report of December 21, 1970 for details regarding this operation. Discharge of acidic solutions was by means of sewer lines which discharged beneath the building. The building was constructed on pilings over an area filled with cinders from their coal burning facilities. Included in this waste discharge, was the diluted sulfuric acid residues from the alpha sulfonated anthraquinones, which contained mercuric sulfate and traces of entrained metallic mercury. The acidic solutions drained through the cinder fill and was discharged via drainage ditch to Tract #9. It is estimated conservatively that over 2.5 million pounds of mercury and mercury compounds were discharged to ultimately become incorporated in sludges in the Arthur Kill. Building #49 has since been demolished.
3. During an inspection period in 1970, drums of highly chlorinated hydrocarbon compounds from still residues were buried in the green highlighted area of the plot plan. The residues were from the manufacture of pre-emergence herbicides.
4. I am enclosing a copy of documentation regarding mercury pollution dated December 21, 1970. Although it had been forwarded to the Water Resources group on January 11, 1971. (See memo of H. Wortreich and later to Marty Sanvito on December 12, 1976, and even more recently copies went to Water Resources in 1979 - no action appears to have been taken.

Is it possible to obtain mining rights?

Walter Olenick

Walter Olenick
Supervisor

(Dy)

MW5

1.8 ground surface

MW4
10.1 ground surface

FILL

3.8 MSL

MOIST → DRY ORGANIC
CLAY/SILTY SAND

NET → MOIST
GRAY SAND

DRY RED BROWN
ORGANIC CLAY

MOIST GRAY-SILTY
CLAY

DRY STIFF
RED BROWN
CLAY - PEBBLES

26.2
Below SL

8.72
Below SL

28.72
Below SL

Below SL

PREPARED BY: JILL MONROE, NUDEP
SOURCE: WELL LOGS, CHMENT

RFA

The GAF Corporation plant in Linden has been in operation under various owners and operations since the early 1900's. The facility began as a German owned Film and aniline manufacturer and was taken over by the United States Justice Department in 1941 and was operated by the U.S. Government until 1966. The plant has been operated by what is now GAF from 1966 until the present.

The plant at its peak manufactured five- hundred finished products which were derived from using four-hundred raw materials in process and storage. The principal product categories are surfactants, dye stuffs, industrial chemicals and metal specialty products.

The facility is bordered on the east by the Arthur Kill, on the west by the Central Railroad and the New Jersey Turnpike. Piles Creek and Dupont Co. are adjacent at the northern border. Sinclair Refining and the Linden-Roselle Sewage Authority are the southern border.

The plant is located in the tidal wetlands associated with the Arthur Kill and the nearby Rahway River. The natural and man made surface waters of the site all flow to the plants waste water treatment system (built in 1978) via an open, unlined drainage ditch system.

The facility is constructed on fill of variable thickness. Boring logs indicate this fill to be underlain by tidal marsh, glacial till deposits consisting of layers and lenses of silt, sand and clay. Bedrock occurs about twenty feet below the surface. Water bearing zones would be found in the fill and in the more permeable sections of the till material. The Brunswick Formation is used as an aquifer for industrial cooling by facilities in the area.

GAF has withdrawn their RCRA Part B application. They no longer intend to store hazardous waste for longer than a 90 day period. The plants permitted hazardous waste container (SOL) storage facility (Building #53) is in the closure process at this time and has been cleared of all contaminated materials. A new, short term storage site (Building 207) is being made ready to receive containerized hazardous waste. The drains in the building have been plugged and door ways have been diked to contain spills. GAF is waiting approval from NJDEP to begin using this new storage space.

A system of unlined earthen drainage channels up to 6 ft. wide in places, through out the facility is used to collect any surface water run-off, wastewater from the chemical process areas, spilled material and the facility raw sewage and send it to the facilities Water Treatment Plant.

Building #49 (demolished) was part of this open ditch system. Among the products manufactured in building #46 were the Alpha Sulfonated Anthraquinones. This building was constructed on pilings over an area filled with cinders from the GAF coal burning facility. Included in the waste discharge from building #49 was diluted Sulfuric Acid residues from the Alpha Sulfonated Anthraquinones which contained mercuric sulfate and traces of entrained metallic mercury. The acidic solution drained through the cinder fill and discharged via open ditches to tract #9 which is now the site of the Industrial Waste Management Facility (IWMF). It is estimated that 2.5 million pounds of mercury and mercury compounds were discharged to ultimately become incorporated in sludges in the Arthur Kill. The Sulfonated Anthraquinones also produced arsenic acid residues as a result of amination of the Sulfonated Anthraquinones in the presence of arsenic acid under pressure. Spent arsenic acid was discharged from Building #49 and deposited in tract #9 via the open drainage ditch.

When work was suspended in Building #49, Building #46 housed the Alpha Sulfonated Anthraquinone manufacturing process. The arsenic acid residue was discharged from this building via a special overhead sewer line. This line ran 300 ft. over a trestle over the railroad tracks and discharged in the low marsh area (site of drum landfill) west of Building #120 adjacent Piles Creek. This area was inundated by the tidal affected Piles Creek and toxic materials flowed back and forth with the tides. In addition to arsenic wastes, iron sludges were also directed to the special sewer area west of Building #46 via the special overhead sewer line.

GAF operated two landfills on site. The larger one "Old Landfill" is located in the southwest portion of the property and is 10-12 acres in size. This landfill was operated from 1964 to 1971 by GAF. It is also possible this area was used by both the U.S. Government and the German manufacture (I.G. Farben) for chemical waste disposal. GAF admits to disposing of chemical wastes and drummed materials, along with building rubble and industrial trash at the Old Landfill. During an inspection in 1970 drums of highly chlorinated hydrocarbon compounds from still residues were detected buried in the Old Landfill. These residues were from the manufacture of pre-emergent herbicides.

In 1975 four concrete standpipes (14" dia) were installed on the Old Landfill to recover oil floating on the water. The only layer is periodically pumped out drummed and disposed of off site. Analysis results from 1982 show the only layer to be high in phenols, mercury and chlorinated hydrocarbons. Depth to water in the standpipes indicates that they penetrate only the landfill material. No perforations are visible on the walls of the pipes. Perforated pipe is considered proper installation with this type well.

A second landfill was on site from 1970 to 1973. This drum landfill is located north of the Old Landfill in the low marsh area west of Building #120. The same area as the arsenic acid disposal over flow.

This area was also proposed as a demolition fill site by GAF and Linden. This area was once a tributary of Piles Creek which borders the site on the north. The creek has been dammed off at Dupont Rd. The area now contains a large volume of standing water, also buried drums and leachate seeps were observed on various inspections.

Seven monitoring wells are in place ground both landfills. Sample analysis results from 1983 show high levels of volatile organics, phenolics and metals contamination. These wells are 2"-diameter PVC. Four wells GAF 1, 4, 5 and 6 are screened in the surficial fill with top of their well screens above the groundwater table. The remaining three wells GAF 2, 3 and 7 are screened in the underlying aquitarad and could be serving as a conduit for flow from the surficial fill. Eleven wells have been proposed by DEP, but not installed at this time.

Since 1977 GAF has operated an Industrial Waste Management Facility (IWMF) on site.

The IWMF is located in the southeastern portion of the facility in the area of Tract #9, the arsenic and mercury disposed site.

The IWMF is made up of the following units:

1. Oil Water Skimmer- to remove waste oil floating on top of wastewater stream before the wastewater enters the IWMF.
2. Lagoon Storage Tank- 6,000 gallon Fiberglass Tank used to store skimmed waste oil. The tank is located on a concrete pad and is surrounded by a concrete dike. On inspection the diked area was found to contain 1 inch of dark oily liquid. The tank styrofoam cover has a large crack. GAF contends the lagoon oil stored in this tank is non hazardous 70% nonylphenol and 19% fatty acids. BWPC informed GAF that classification of lagoon oil would require additional testing. In any case it is manifested to the Delaware Container Co. of Pennsylvania and burned.
3. Aeration lagoons - 3 large 200' x 300' synthetic membrane lined.
4. Clarifiers- 3 waste water clarifiers-

In Jan. 1979 a concrete wall in the equalization basin of the IWMF collapsed. The basin was primarily used to dampen acid wastes before being neutralized.

In March 1979 the Interstate Sanitary Commission cited GAF for excessive levels of phenols, arsenic acid and high concentrations of chlorinated hydrocarbons in the wastewater discharge.

A non-compliance report was drafted in June '79 changing that the NPDES discharge limit for phenols and arsenic acid had been exceeded.

Sept. 1979 the GAF IWMF was cited for violation of the NPDES permit due to discharge of heavy foam to the Arthur Kill.

June 1986 GAF and NJDEP entered into an ACO requiring GAF to meet the

Tetrahydrofuran (THF) is manufactured at this plant. As a result of the manufacture of this product, a residue accumulates in the process reactor when the material is synthesized and also after distillation a residue accumulates in the distillation unit. When a sufficient quantity of residue is accumulated it is removed directly from these units and sent off site to a licensed/permitted T/S/D Facility. The THF area has a concrete base and a 3 ft. concrete dike surround the area. On inspection the diked area was found to contain 1-2 inches of dark oily liquid.

GAF was included in the 1983 Phase I dioxin study by NJDEP the results of this sampling proved to be inconclusive, due to background interference in May 1985 the facility was included in the EPA National Dioxin Study. Soil and sediment samples were taken, with no detectable dioxin levels in the soils. Sediment results were not available.

Enforcement Actions and Incidents:

June 1973- The state issues a Notice of Intent to deny renewal of the GAF registration to landfill on site.

June 1981- GAF failed to use or complete the required forms of New Jersey to dispose of waste oil by private disposal service.

April 1969- A private investigator was called on site due to plant workers being overcome by noxious fumes.

March 1979- An explosion occurred in Building #46 and a fire broke out. Suspected cause, a reaction of sulfuric and nitric acids. One half the building is completely demolished.

Nov. 1982- Storage tank containing oleum (approx. 500 gals.) ruptured. The spilled material was diluted with water and allowed to flow to the drainage ditches.

Nov. 1982- A final order by EPA Reg II issued for improper handling and disposal of PCB's at GAF.

RECOMMENDATIONS

GAF through their consultant Aware Inc. has presented NJDEP/DWR with a Supplemental Information and Compliance Plan concerning the renewal of NJPDES permit no. 0000019.

Drainage Ditches- Ground water Quality Management evaluate the impact of ditches on area ground water quality. Sampling of ditch sludges parameters to include dioxin. Upgrade or remove ditches from service.

1. GAF has historically been involved in the manufacture of dioxin precursors and dioxin forming compounds. NJDEP Phase I study proved inconclusive and the EPA results are incomplete. Further dioxin sampling is needed at GAF. Both landfills, special sewer areas, Tract #9, Buildings #46, #36 and area where Building #49 once stood should be sampled.
2. Further investigate the mercury disposal area. Initiate soil sampling in the area. Parameters to include Priority Pollutants and Dioxin.
3. GAF should resample lagoon oil for it to be classified as non-hazardous.

Expedite approval of Building 207 as the hazardous waste container storage site.

Up grade monitoring well system at the site.

On Oct. 1986 inspection at GAF by Bureau of Site Assessment observed empty drums, stained ground construction materials and construction debris in the arsenic acid disposal site east of the "Old Landfill". This area should be inspected by Solid Waste as a possible land fill site.

GAF CHEMICALS CORPORATION
FOOT OF SOUTH WOOD AVENUE
LINDEN, UNION COUNTY, NEW JERSEY
EPA ID # NJD002185973

GENERAL INFORMATION AND SITE HISTORY

The GAF Chemicals Corporation (GAF) operates a 125-acre chemical manufacturing facility located on South Wood Avenue, Block 587, Lots 1 and 2.1 in the City of Linden, Union County, New Jersey. The site lies in an industrial area on the western bank of the Arthur Kill. The site is bordered to the northwest by DuPont's Grasselli Plant, to the southwest by BP Oil and to the south by LCP Chemicals and Plastics, Inc. and Northville Industries. Undeveloped wetlands associated with Piles Creek lie to the north. The New Jersey Turnpike borders on the west. Tremley and Linden residential areas begin 0.3 mile west of GAF. Carteret residential areas are 1.4 miles south. Residents of New York's Staten Island lie 1.2 miles southeast.

Grasselli Chemicals Company began operations in this general area of Linden in 1885, although the portion of the former Grasselli property, which is now owned by GAF, was not utilized for chemical manufacturing until approximately 1919. It became Grasselli Dyestuff Company and was subsequently incorporated in 1929 as American I.G. Chemical Corporation, which was owned by I.G. Farbenindustrie A.G., a German company. The U.S. company's name was changed in 1939 to General Aniline and Film Corporation. In 1942, 98% of the company stock was seized by the United States Justice Department as a war asset and the facility was operated by the U.S. Government as Alien Property Custodian until 1965, when the U.S. Government sold the stock to the public in a public offering. On April 24, 1968, General Aniline and Film Corporation changed its name to GAF Corporation. In 1986, GAF Chemicals Corporation was incorporated, and all of the assets of the former Chemicals Division of GAF Corporation were transferred to GAF Chemicals Corporation.

SITE OPERATIONS OF CONCERN

The product categories that have been manufactured at the site include surfactants, dyestuffs, pigments, industrial chemicals, and metal speciality products. The following general categories of compounds were the primary products manufactured by the various operators of the facility during the time frames specified:

<u>PRODUCTION COMMENCED</u>	<u>MATERIALS PRODUCED</u>	<u>PRODUCTION CEASED</u>
1919	Dyestuffs	1974
1935	Igepons (Surfactants)	Still in production
1940	Igepals (Surfactants)	Still in production
1941	Carbonyl Iron Powders (Iron Pentacarbonyl)	Late 1940s
1945	Reppe Chemistry Pilot Plant	1957
1955	Caustic Chlorine	1971
1957	Ethylene Oxide	1971
1958	Phosphate Ester Surfactants	Still in production

1962	Agricultural Herbicides, Amino Type Compounds including Amiben	1977
1963	Low Foamers (Surfactants)	Still in production
1964	Polyclar (Polyvinyl pyrrolidone, food grade beer clarifier)	1968
1965	Gantrez Half Esters	1969
1966	Ganex	Still in production
1970	Gafquat 755	Still in production
1975	Propoxylations (Propylene Oxide Surfactants)	Still in production
1976	Tetrahydrofuran	Still in production

Currently, only tetrahydrofuran, surfactants, Gafquat 755 and Ganex are manufactured by GAF at the site. GAF plans to phase out production of surfactants by March 1991. The production will be moved to their plants in Georgia and South Carolina.

Past chemical manufacturing operations at the site generated numerous solid and liquid wastes including, but not limited to:

- a. Phenol
- b. Arsenic wastes including arsenic acid
- c. Mercury compounds (entrained metallic mercury in dilute sulfuric acid solution, mercuric sulfate)
- d. Chlorinated hydrocarbon compounds from still residues
- e. Amiben and other amino type agricultural herbicides

Present manufacturing operations at the site generate phenol wastes, spent caustic, tetrahydrofuran bottoms and wastewater from cleaning process equipment.

A 10 to 12 acre landfill, sometimes referred to as the "Old Landfill", is located in the southwest portion of the facility. This landfill was operated from the early 1930s until 1970 by the various owners responsible for the facility during that time period. In 1981, GAF submitted a Comprehensive Environmental Response, Compensation and Liability Act (hereinafter "CERCLA") Section 103(c) Notification of Hazardous Waste Site document, and on May 22, 1985, GAF submitted a RCRA and HSWA Solid Waste Management Unit Information document, which described the materials disposed in the Old Landfill. GAF and the various other owners deposited dry and liquid chemical wastes (organics, inorganics, solvents, heavy metals, acids), drummed materials, bulk liquids, phenolic oils, laboratory wastes, off-specification products, still residues, solid wastes and industrial trash in this landfill. GAF alleges that the "Old Landfill" was operated in accordance with applicable law at the time of its operation.

GAF's final NJPDES Discharge to Surface Water Permit (No. NJ0000019) became effective March 1, 1986. The draft Discharge to Groundwater, dating back to November 25, 1987, has not been issued final at the time of this writing.

GAF has had various spills and releases which will be discussed in the following sections.

GROUNDWATER ROUTE

Bedrock under the GAF facility is the Brunswick Formation, soft highly fractured hematite stained red shales with some interbedded sandstones. The top 8 to 18 feet of the Brunswick Formation is considered residual soil, or weathered bedrock and can be described as clayey silt. Above this lies a layer of glacial deposits ranging between 9 and 23 feet in thickness, attributed to ground moraine. Above the glacial material lie tidal marsh deposits. The bottom 1.5 to 6 feet consists of organic silt and clay. This material grades into 1.5 to 10 feet of dark brown fibrous peat deposits containing minor amounts of sand and black organic silt and clay. The site has been reclaimed from tidal marshes by the placement of 5 to 10 feet of fill. The fill consists of soil, industrial materials and demolition debris.

Generally, the fill material acts as a surficial water bearing zone above the less permeable tidal marsh deposits and glacial till. The Brunswick Formation also acts as a semi-confined aquifer under these clays and silts. The GAF facility is located within a tidally influenced groundwater discharge area, which flows towards the Arthur Kill and Piles Creek.

At present, GAF has 12 4 inch diameter monitoring wells installed in 1983, 4 standpipes installed in the center of the landfill in 1975, 32 well points and 13 surface gages. The wells monitor a variety of depths. GAF proposes to install additional shallow and deep 2 inch diameter wells in accordance with an Administrative Consent Order (ACO) signed June 16, 1989. See site map for locations.

Groundwater in the vicinity of GAF is not used for potable purposes due to brackish conditions and chemical contamination. The nearest potable well, lying approximately 3.3 miles to the northwest, is operated by the Elizabethtown Water Company. It draws from the Brunswick Formation at a depth of 348 feet. The City of Rahway has a potable well approximately 4 miles west of GAF, drawing from the Brunswick Formation at 269 feet. There are no potable water intakes considered threatened by GAF.

GAF obtains water for industrial use from the Arthur Kill and from Elizabethtown Water Company. The nearest industrial well is operated approximately 2.6 miles north of GAF. It draws from the Brunswick Formation at a depth of 570 feet.

Groundwater sampling was conducted at GAF on November 29, 1988 by the NJDEP, Division of Hazardous Waste Management (DHWM), Bureau of Planning and Assessment (BPA). Sampling results, which are discussed below, revealed acetone, naphthalene, 1,2-dichloropropane, 1,2-dichlorobenzene, 4-chloraniline, acenaphthene, phenanthrene and bis (2-ethylhexyl) phthalate. There are, however, no groundwater uses in the immediate vicinity. Groundwater discharges to the adjacent surface water bodies, Arthur Kill and Piles Creek.

A draft NJPDES - Discharge to Groundwater permit was issued to GAF on September 16, 1985 and again on November 25, 1987. At the time of this writing, a new draft is being prepared.

SURFACE WATER ROUTE

GAF is bordered to the north by Piles Creek and to the east by the Arthur Kill. The portion of GAF containing the Waste Water Treatment Plant lies near the bank of the Arthur Kill. To the north of the Waste Water Treatment Plant, DuPont's Graselli Works separates GAF from the Arthur Kill by approximately 1200 feet. Piles Creek flows to within 100 feet of GAF by the Drum Landfill area, but is otherwise isolated by hundreds of feet of undeveloped swampland.

GAF uses an unlined ditch system to collect and transmit wastewater for disposal from the various buildings and chemical process areas throughout the site. This network of unlined topographical depressions and channels receives chemical process water, cooling water and sanitary wastewaters. The ditch system also captures surface runoff and leachate seeping from the landfills. Prior to 1977, wastewater in the ditches discharged to nearby surface water bodies, including Piles Creek and the Arthur Kill. In 1977, GAF constructed the Waste Water Treatment Plant which has since received the wastewaters. The connection to Piles Creek was dammed off in 1966.

GAF's consultant, Eckenfelder Inc., states in their Remedial Investigation Work Plan of December 1989 that runoff from approximately 82 acres entered the ditch system. Runoff on the remaining 43 acres, therefore, infiltrates to groundwater or flows untreated to surrounding surface water bodies.

A sample was collected from the drainage ditch during the November 29, 1988 sampling episode conducted by the NJDEP, DHWM, BPA. Bis (2-ethylhexyl) phthalate, arsenic and manganese were detected in the sample. Sampling results are discussed below.

The surface water downstream from GAF has no potable uses due to salinity and chemical contamination. The Arthur Kill is used as a channel for large freight ships and for recreational boating, fishing and crabbing.

The only wetland within 2 miles is Pralls Island, located 800 feet across the Arthur Kill in New York territory. The Peregrine Falcon, a federally endangered species, is known to hunt in the salt marshes near GAF. Untreated runoff from a portion of GAF's property has the potential to transport contaminants off site to surrounding surface water bodies.

GAF is permitted to discharge to the Arthur Kill from their Waste Water Treatment Plant according to a NJPDES - Discharge to Surface Water Permit No. NJ0000019. The permit went into effect on March 1, 1986 and is due to expire on January 31, 1991. Tests for Acute Toxicity in GAF's discharge revealed GAF's discharge consistently failed to meet the minimum acute toxicity permit limitation of LC50 > 20% (by volume). The resultant Administrative Consent Order, signed June 1, 1989, requires GAF to upgrade their Waste Water Treatment Plant in order to meet their effluent limitations by March 4, 1991. GAF is in the process of complying with the ACO requirements.

AIR ROUTE

GAF has 38 active air permits and 23 recently expired temporary permits.

In April 1969, a private investigator was called on site due to plant workers being overcome by noxious fumes. Releases and Enforcement violations are listed as follows:

8/78	Order to Cease Violation (visible smoke emitted from Boiler #1)
3/31/81	Notice of Violation (visible air emissions)
8/25/87	Notice of Violation (boiler stack exceeded emission capacity)
11/6/87	(40 lbs. of Ethylene oxide released)
7/20/88	(35 lbs. of Ethylene oxide released)
11/17/88	(Scrubber failure caused release of 165 lbs HCL and 260 lbs SO2)
1/4/89	(Tetrahydrofuran vapor release from 2000 lb. spill)

There is a continued potential for release at GAF via volatilization from the open ditch system.

SOIL

The GAF facility is placed on up to 10 feet of fill material which overlies the native marsh deposits. Some of this fill material may have been contaminated prior to emplacement.

Hazardous Waste Management practices over the past 100 years at GAF has lead to widespread contamination. GAF continues to discharge industrial and sanitary wastes to open ditches and impoundments under the buildings.

Soils and sediments were sampled by the NJDEP, DHWM, BPA on December 1, 1988. Numerous volatile organics, semi-volatiles and metals were detected in the samples. Sampling results are discussed below.

Prior to 1978, GAF produced a bacteriostatic/fungistatic agent (Preventol-I) containing 2,4,5-trichlorophenol (2,4,5-TCP) which is classified as a Class I dioxin precursor by the USEPA. Two samples of Preventol - I were tested on June 17, 1983 for 2,3,7,8-tetrachlorodibenzo dioxin (2,3,7,8-TCDD) and were found to contain 0.62 and 0.65 ppb.

On June 23, 1983, ERM-Northeast collected six samples (from ditch sediments, production building floors and in a production tank) for 2,3,7,8-TCDD analysis. Analysis by ETC indicated no presence of 2,3,7,8-TCDD with detection limits ranging from 0.02 to 0.51 ppb. Two of the samples, however, had no surrogate recovery, indicating possible matrix interference. All sediment samples were composited.

On July 11, 1985 USEPA personnel collected 34 composite samples from the area where Preventol was manufactured. Nineteen of the samples were of surficial soils; eight were collected from ditch sediments; and the remaining seven were QA/QC samples including replicates and blanks. None of the nineteen soil samples showed the presence of 2,3,7,8-TCDD above the detection limits. Seven of the eight sediment samples showed positive detection of 2,3,7,8-TCDD at levels ranging from 0.0036 to 0.0263 ppb. The standard action level for 2,3,7,8-TCDD in soils and sediments is 1 ppb.

On December 1, 1988, the NJDEP/DHWM/BPA collected ten on-site soil/sediment samples for 2,3,7,8-TCDD analysis from the impoundments and ditches associated with production Buildings 36, 46, 52 and 204. The laboratory

reported all samples as non-detected for 2,3,7,8-TCDD with detection limits for maximum possible concentrations ranging from 0.022 to 0.25 ppb. A QA/QC review however, rejected the data because the Performance Evaluation sample, reported as containing 3.25 ppb 2,3,7,8-TCDD was actually a soil blank containing no 2,3,7,8-TCDD.

The Remedial Investigation, required by the Administrative Consent Order of June 16, 1989, will include limited sampling for 2,3,7,8-TCDD. Table 3 is a compilation of 2,3,7,8-TCDD analyses.

DIRECT CONTACT

In April 1969, a private investigator was called on site due to plant workers being overcome by noxious fumes. No other reported incidents of direct contact were found in the file review. There is still potential for direct contact by employees via the open ditch system. The ditch system continues to transmit untreated wastewater and landfill leachate through the site.

The nearest offsite population, in the Tremley section of Linden, is approximately 0.3 mile west of GAF. The site is surrounded by an 8 foot chain link fence and barbed wire and has a 24 hour security guard at the entrance gate.

FIRE AND EXPLOSION

GAF reports the following fires and explosions:

<u>DATE</u>	<u>LOCATION</u>	<u>NATURE OF EVENT</u>
1959-1960	Building 36	Fire
December 1965	Building 204E	Explosion (Propargyl Bromide)
Circa 1974	Building 3	Fire
October 1974	Building 46	Explosion and Fire (Nitration Reactor)
March 1979	Building 46	Explosion (Nitration Reactor)

There is a continuing potential for fires or explosions at GAF due to the materials handled, including ethylene oxide. Ignition sources are restricted on site.

ADDITIONAL CONSIDERATIONS

There is evidence of vegetative stress at GAF. Much of the land does not support plant growth. While there are no reports of damage to fauna, there is potential due to the presence of contamination in the soil and surface water on site. Before 1977, GAF discharged wastewaters directly to the Arthur Kill. Bioaccumulative compounds, including mercury, may have damaged fauna and contaminated the food chain. Off-site property may have been damaged via runoff carrying contaminants to adjacent surface water bodies.

ENFORCEMENT ACTIONS

NJDEP Enforcement Actions are summarized below:

DATE ISSUED	NATURE OF VIOLATION	DISPOSITION	NATURE OF NOTICE
AUGUST 1978	EMITTING VISIBLE SMOKE FROM BOILER #1	COMPLIED-NO PENALTY	ORDER TO CEASE VIOLATION
MARCH 31, 1981	VISIBLE AIR EMISSIONS	WARNING-NO PENALTY OR ACTION REQUIRED	NOTICE OF VIOLATION
MAY 29, 1984	RCRA DEFICIENCIES BASED ON AUGUST 11, 1983 INSPECTION	DEFICIENCIES CORRECTED- \$2,000 PENALTY PAID	ADMINISTRATIVE ORDER
OCTOBER 13, 1985	RCRA WASTE STORAGE DEFICIENCIES	CORRECTIVE ACTION TAKEN \$6,300 PENALTY PAID	NOTICE OF VIOLATION
JUNE 4, 1987	OPERATING EQUIPMENT WITHOUT A PERMIT	PERMIT OBTAINED- \$4,400 PENALTY PAID	NOTICE OF VIOLATION
AUGUST 25, 1987	BOILER STACK EXCEEDED EMISSION CAPACITY	\$100 PENALTY PAID	NOTICE OF VIOLATION
NOVEMBER 17, 1988	SO ₂ HCL RELEASE DUE TO EQUIPMENT FAILURE - FAILURE TO REPORT	\$2,000 PENALTY PAID \$4,000 PENALTY PAID \$1,000 PENALTY PAID	NOTICE OF VIOLATION
JUNE 7, 1989	WWTP BIOASSAY LC ₅₀ LIMITATION	\$308,000 PENALTY PAID	VOLUNTARY ADMINISTRATIVE CONSENT ORDER
JUNE 19, 1989	SITE REMEDIATION	\$7.5 MILLION IN LETTER OF CREDIT	VOLUNTARY ADMINISTRATIVE CONSENT ORDER

SUMMARY OF SAMPLING DATA

1. Sampling date: January 25, 1983
Sampled by: ERM - Northeast
Plainview, New York
Samples: Seven monitor wells (2 inch diameter)
Laboratory: ETC (#12257)
Edison, New Jersey
Parameters: Volatile organics, base/neutral compounds,
acid compounds, metals, cyanide and phenol.
Sample description: Seven on site monitoring wells:

	<u>DEPTH (feet)</u>	<u>SCREEN INTERVAL (feet)</u>
W-1	10	0-10
* W-2	20	12-20
* W-3	18	13-18
W-4	10	0-10
W-5	12	0-12
W-6	9.5	0-9.5
* W-7	28	23-28

*(W-2, 3 and 7 will be removed, properly sealed and replaced by shallower wells. The existing borings penetrate the peat and clay layers and may act as conduits for vertical migration of contaminants).

Contaminants detected: Elevated levels of benzene, halogenated benzene compounds, naphthalene, phenol, arsenic and cyanide were detected in monitoring wells W-4, 5, 6 and 7.

No contaminants were detected in W-2 and W-3.
Contaminants detected are summarized below:

(ppb)

	<u>W-1</u>	<u>W-4</u>	<u>W-5</u>	<u>W-6</u>	<u>W-7</u>
Benzene	38	584	127	319	87
Chlorobenzene	ND	15,200	958	538	319
1,2-Dichloroethane	ND	52	ND	ND	41
Ethyl benzene	33	27	13	BMDL	ND
Toluene	69	96	BMDL	BMDL	BMDL
Phenol	BMDL	5,800	BMDL	BMDL	BMDL
1,2-Dichlorobenzene	ND	907	343	111	108
1,3-Dichlorobenzene	ND	490	148	28	14
1,4-Dichlorobenzene	ND	497	233	34	23
Naphthalene	203	114	36	26	BMDL
1,2,4-Trichlorobenzene	ND	83	132	17	BMDL
Arsenic	ND	8.6	360	110	BMDL

ND = Not detected

BMDL = Below method detection limit

QA/QC:-

No QA/QC information other than method detection limits were provided.

File location:

NJDEP/DHWM/BPA
Trenton, New Jersey

2. Sampling date:

November 29, 1988

Sampled by:

NJDEP/DHWM/BPA
Trenton, New Jersey

Samples:

One sample from the drainage ditch north of the Waste Water Treatment Plant, bordering DuPont's Grasselli Plant. Ten groundwater samples.

Laboratory:

Roy F. Weston, Inc.
Lionville, Pennsylvania

Parameters:

Target Compound List plus 30 peaks

Sample description:

One sample from the drainage ditch north of the Waste Water Treatment Plant. Ten onsite monitoring wells described as follows:

	<u>DEPTH (feet)</u>	<u>SCREEN INTERVAL (feet)</u>
GAF-7S	9	2-9
7D	44	34-44
9S	12.5	2.5-12.5
9D	63	53-63
10S	9	2-9
10D	61	51-61
13S	10	3-10
13D	51	41-51
14S	9	2-9
14D	44	34-44

Contaminants detected:

In the drainage ditch sample, bis(2-ethyl hexyl) phthalate at 12 ppb, arsenic at 72.2 ppb and manganese at 1280 ppb were detected. Bis(2-ethyl hexyl) phthalate was detected in all the wells. Metals detected are summarized in Table 1. Organic contaminants detected are summarized below:

(ppb)

	<u>7S</u>	<u>7D</u>	<u>9S</u>	<u>9D</u>	<u>10S</u>	<u>10D</u>	<u>13S</u>	<u>13D</u>	<u>14S</u>	<u>14D</u>
ACETONE	ND	420	ND	ND	ND	2400	ND	ND	ND	ND
1,2-DICHLOROPROPANE	ND	ND	ND	ND	ND	ND	31	ND	ND	ND
1,2-DICHLOROBENZENE	ND	ND	ND	6	ND	ND	ND	ND	ND	ND
NAPHTHALENE	ND	ND	18	ND	ND	ND	ND	ND	ND	NL
4-CHLOROANILINE	83	ND	ND	ND	ND	ND	ND	ND	ND	ND
ACENAPHTHENE	ND	ND	12	ND	ND	ND	ND	ND	ND	ND
PHENATHRENE	ND	ND	21	ND	ND	ND	ND	ND	ND	ND
BIS(2-ETHYLHEXYL) PHTHALATE	3	5	1	17	2	460	26	3200	500	7

ND = Not detected

QA/QC:

A QA/QC review of the data by the NJDEP, Division of Hazardous Site Mitigation (DHSM), Bureau of Environmental Measurements and Quality Assurance (BEMQA) stated that:

- o base/neutral results for the drainage ditch sample were rejected.
- o base/neutral acid extractable results were rejected for MW-14S.
- o holding times for the pesticide/PCB extraction were exceeded.
- o selenium results for all samples were rejected due to blank contamination.
- o low levels of various metals were found in the field blank; however, levels in the samples were five times greater than in the field blank.
- o percent recoveries of antimony, chromium and silver were high, thus qualifying, "J", the values.
- o lead and selenium results are qualified, "J", due to low sample spike recovery.

File location:

NJDEP/DHWM/BPA
Trenton, New Jersey

3. Sampling date:

December 1, 1988

Sampled by:

NJDEP, DHWM, BPA
Trenton, New Jersey

Samples:

25 soil/sediment samples

Laboratory:

Envirodyne Engineering Inc.
St. Louis, Missouri

Parameters:

Target Compound List plus 30 peaks, dioxin.

Sample description:

Soil and sediment samples were collected throughout various portions of the site.

Contaminants detected:

Numerous metals above NJDEP action levels have been detected on site. Sediment 3 had the greatest number and highest concentrations of volatile organics. Sediments 2 and 11 had the most semi-volatile compounds with Sediment 2 having the highest concentrations. No pesticides or PCBs were detected in the samples. Contaminants detected are summarized in Table 2. Dioxin results are summarized in Table 3.

QA/QC:

A complete QA/QC review was conducted by the NJDEP, DHSM, BEMQA. Findings included:

- o Samples Sed-1, Sed-4, Sed-6, Sed-8, Sed-10, Sed-11, Sed-12, Sed-13, Sed-15 and Soil-6D were all rejected for volatile organics due to holding times being exceeded. All additional samples were qualified as "J" due to holding times between 10 and 15 days.

- o Samples Soil-2, Soil-3, Soil-9D, Soil 10, Sed-10 and Sed-11 were rejected due to exceeded holding times of base/neutral acid extractables.
- o Field blank results for base/neutral acid extractables were rejected due to the method blank being outside control limits.
- o The laboratory incorrectly reported not detected for the pesticide/PCB analysis, however, Aroclor-1260 in Sed-11 and Aroclor-1254 in Sed-9 were detected at concentrations of 190,000 ppb and 130,000 ppb, respectively.

File location:

NJDEP/DHWM/BPA
Trenton, New Jersey

TABLE 1

11/29/88

INORGANIC ANALYSIS SUMMARY GAP, Linden

LABORATORY: WESTON-LIONVILLE

CONCENTRATION (Units UG/L)

ANALYTE	78	7D	9S	9D	10S	10D	13S	13D	14S	14D	
Aluminum	160	7390	69.8	715	94.9	1840	23500	573	13800	514	Alu
Antimony	34.6	89.0	34.6	44.5	34.6	34.6	66.8	34.6	100	40.8	B Ant
Arsenic	6.6	7.6	10.7	1.2	20.0	12.0	26.0	12.0	150	12.0	U Ars
Barium	65.5	356	232	62.3	468	113	354	455	2530	53.0	B Bar
Beryllium	0.10	2.6	0.10	2.6	0.10	3.5	6.1	1.7	3.2	2.6	B Ber
Cadmium	2.2	2.2	2.2	2.2	2.2	2.2	6.7	2.2	3.8	2.2	U Cad
Calcium	162000	764000	37900	1800000	36500	1870000	201000	975000	737000	1440000	Cal
Chromium	3.0	11.0	6.4	3.0	3.0	3.0	104	3.0	54.2	3.0	U Chr
Cobalt	4.6	5.6	3.3	3.3	3.3	3.3	1150	3.3	190	7.1	B Cob
Copper	48.2	41.0	25.7	51.3	15.0	56.3	123	48.8	188	61.0	Cop
Iron	851	41300	8130	16100	15100	18400	433000	1220	224000	84300	Iro
Lead	1.3	13.4	3.9	3.9	2.0	7.4	52.8	1.3	1160	2.0	B Lea
Magnesium	31100	337000	19400	600000	35900	516000	118000	167000	486000	518000	Mag
Manganese	712	2440	112	1070	196	2080	141000	375	157000	8060	Man
Mercury	1.6	0.44	0.20	4.1	0.20	0.20	0.22	0.20	10.1	0.20	U Mer
Nickel	58.9	23.0	16.3	8.9	6.3	9.6	527	8.5	107	28.5	B Nic
Potassium	5800	14000	13400	26200	36800	24600	18100	488000	55900	29800	Pot
Selenium	1.9	0.90	2.7	1.8	1.1	1.0	2.3	1.9	2.7	9.0	U
Silver	5.1	5.1	6.8	5.1	5.1	5.1	21.0	5.1	16.3	5.1	U
Sodium	95800	619000	309000	3000000	476000	2260000	814000	2310000	3140000	3390000	Sod
Thallium	36.0	36.0	23.0	4.6	2.3	48.0	36.0	44.0	48.0	36.0	B Tha
Vanadium	4.8	32.6	68.3	7.5	4.8	4.8	254	4.8	95.5	18.0	B Van
Zinc	120	82.5	46.4	42.6	16.1	42.3	979	35.4	380	93.8	Zin
Cyanide	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	12.6	10.0	U Cya

The following extracted samples required dilution because they contained high levels of target compounds:

Well#	Dilution Factor
10D	10
13D	50
14S	10

TABLE 2-11

SUMMARY OF ALL SITE BUILDINGS

GAF Chemicals Corporation, Linden Plant

Building No.	Time Period	Activities
1	1929 \pm 1952	Production
3	1929 \pm 1976	Cooperage - Warehouse
5	1921 \pm 1978	Carpenter Shop
6	1920 \pm	Mason Shop
7	1920 \pm	Rigger Shop
8	1921 \pm 1976	Warehouse
9	1920 \pm 1976	Paint Shop - Lead Shop
13	1940*	Power House
18	1929 \pm 1976	Firehouse - Safety Equipment
20		Pipe Shop
22		Production
23		Production
24		Production
25		Production
26		Production
27		Production
28		Production
29	1929*	Garage
31	1915 \pm 1978	Laboratory and Offices
33		Laboratory Store Room
34	1941 \pm	Naphthaline Storage
35	1921 \pm 1984	Offices, later Warehouse - Pipe Shop
36	1921*	Production
40		
41A	1942 \pm	
41B	1965*	THF Still
42	1942 \pm	Soda Ash Storage
43	1944 \pm	Metal Storage
44	1925 \pm 1976	Water Meters
45	*	Chill Brine House - Refrigeration Equipment
46	1926 1986*	Production
47	1927*	Engineering Department and Maintenance Shops
48	1934*	Warehouse/Laboratory
49	1934 \pm 1976	Production
50	1927 \pm 1982	Production
51	1929 \pm 1982	Laboratory and Offices
52	1927*	Production
53	1937*	Production (1937-1974)
		Waste Storage (1974-1986)
56		Oil House

B⁴

TABLE 2-11 (continued)

SUMMARY OF ALL SITE BUILDINGS

GAF Chemicals Corporation, Linden Plant

Building No.	Time Period	Activities
63	*	Oil Pumping Station
66	*	Coal Silos
100	1939/40*	Administration Building
101	1929*	Showers and Lockers
110	*	Cooling Water Pumps
120	1956*	Warehouse
200/201	1941 ±	Ammonia Storage and Filling Station
200	1940*	Production
201	1940 ± 1976	Storage
202	1947 ± 1976	Acetylene Generation
203	1941 ± 1976	Offices and Laboratory
204	1946*	Pilot Plant/Semi-Works Production
205	1916 ± 1929	Storage
207	1970*	Pilot Plant/Engineering Offices Laboratory and later Silver Recovery
300	*	Ethylene Oxide Area/Administration
301		Service Building
302		Utilities
303		Reaction Building
304		Compressor Control
305		Distillation Building
306	*	Refrigeration Building
308		Substation
309		Storage
350	*	Machinery Building
400	*	Electrical Control
402	*	Pump Station
410	*	Filter Press & Control

Note:

*Building still in existence, either wholly or in part

TABLE 2-12

BUILDINGS CONTAINING SIGNIFICANT HAZARDOUS MATERIALS

GAF Chemicals Corporation, Linden Plant

BUILDING 3AB:

Activity: Drums and barrels used for intermediate and semi-finished dyestuffs and pigments were washed in this building for reuse. Residue from products manufactured in Buildings 46, 49, 50 and 52 were rinsed from these containers.

BUILDING 13:

Activity: Powerhouse. This unit has burned various production byproducts including nonene, nonane, di-nonyl phenol bottoms, ethanol, and ortho nitro toluene as a supplement to the No. 6 fuel oil.

BUILDING 24:

Activity: Produced sulfur colors and nitrobenzene, dinitrobenzene, nitrotoluene and dinitrotoluene.

Raw Materials: Inorganic acids and bases, non-metallic elements and several hydrocarbons.

BUILDING 36:

Activity: Produced sulfur colors, bactericide/fungicide, beta oxy naphthoic acid and numerous surface active agents.

Raw Materials: Inorganic acids including sulfuric and nitric, and inorganic bases including caustic chloride. Various organics including ethylene oxide, nonene, phenol, alkyl phenol, di-isobutylene, sodium oxethane, disobutyl phenol, chlorobenzene, 2,4,5 trichlorophenol, amines, various alcohols, non-metallic elements, and several acid chlorides.

Byproducts: Organic solvents, caustic solutions, poly alkyl phenols, fatty acid residues, and nonyl phenol.

BUILDING 46:

Activity: Produced dye intermediates

Raw Materials: Inorganic acids and bases, various metallic catalysts, and numerous other organic salts purchased or produced in 49 Building, and numerous hydrocarbon solvents.

Byproducts: Sodium sulfide, dinitrobenzene isomers, iron oxide sludge, dichlorobenzoyl chloride still bottoms, arsenic acid, and ammonia.

TABLE 2-12 (continued)

BUILDINGS CONTAINING SIGNIFICANT HAZARDOUS MATERIALS

GAF Chemicals Corporation, Linden Plant

BUILDING 48, Dept. 600:

Activity: Produced color formers for the former Binghamton photo products plant.

Raw Materials: Inorganic acids including chlorosulfonic acid, inorganic bases, organic solvents, including methyl hexanone, xylene, THF, toluene, naphthalene, nitrobenzene, benzene, heptane, chloro-nitrobenzene, acetone, pyridine and ethylene dichloride, as well as mercury, diethylamine, and anhydrous ammonia.

Byproducts: Acetic acid, organic solvents and mercury compounds.

BUILDING 49:

Activity: Produced dye intermediates.

Raw Materials: Inorganic acids and bases, various metallic catalysts including mercury, numerous other salts purchased or manufactured in 46 Building, and various organics, including chlorobenzene, nitrobenzene, and anthraquinone.

Byproducts: Organic solvents, dilute sulfuric acid, benzoic acid, arsenic medicuric sulfate, metallic mercury, polychlorobenzoyl chlorides, polychloronitro benzenes, iron sludges, and lime cakes.

BUILDINGS 50, 52, AND 53:

Activity: Produced dyestuffs and pigments. Building 50 was used primarily for simple acid pasting; Building 52 was used for dyestuff and pigment production using intermediates from 46 and 49 Buildings and for pigment production using urea and phthalic anhydride. Building 53 was used for physical conditioning of products from Buildings 50 and 52.

Raw Materials: Dye intermediates produced in Buildings 46 and 49; inorganic acids including chlorosulfonic and sulfonic, inorganic bases, various chlorinated solvents including nitrobenzene, dichlorobenzene, trichlorobenzene, naphthalene, metallic and non-metallic elements, including sulfuryl chloride, cuprous chloride, and aluminum chloride.

Byproducts: Ammonia, organic solvents, sodium sulfites, m-amino benzene sulfonate, sodium acetate, ethylene glycol iron cake, and tars.

B¹

TABLE 2-12 (continued)

BUILDINGS CONTAINING SIGNIFICANT HAZARDOUS MATERIALS

GAF Chemicals Corporation, Linden Plant

BUILDING 120:

Activities: Surfactant materials of all kinds, i.e., Igepals, non-ionic surfactants, Alipals, phosphate esters, and low foamers are drummed and stored in this building.

BUILDING 200:

Activity: Produced carbonyl iron powder.

Raw Materials: Sponge iron, hydrogen, carbon monoxide and coke

BUILDING 204:

Activity: Initially a pilot facility used to produce acetylenic products from formaldehyde and acetylene. Later use of the building was for semi-works production of color formers for the former Binghamton photo products plant.

Raw Materials: Inorganic acids and bases, organic solvents including alcohols, heptane and benzene, as well as purchased organic salts were used in this production. Pilot batches of surfactants were made using ethylene oxide, various alcohols, and other organic salts and hydrocarbons.

Byproducts: Organic solvents and acetic acid.

BUILDING 207:

Activity: Used for silver recovery from the film operation, originally a research facility for the Chemical Engineering group in 1970.

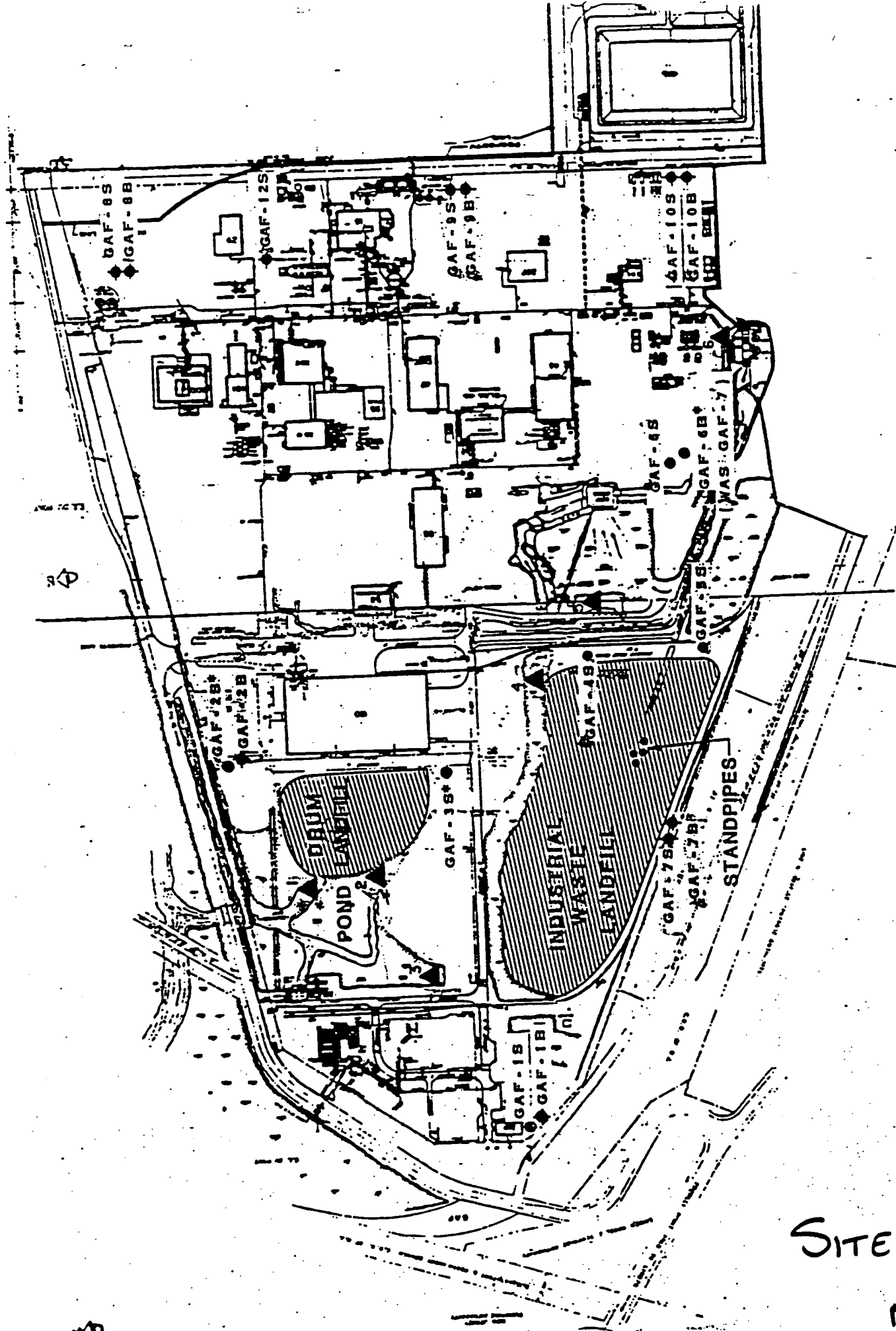
Raw Materials: Scrap film, caustic and organic salt

ETHYLENE OXIDE AREA (BUILDINGS 303, 304, 305, 306)

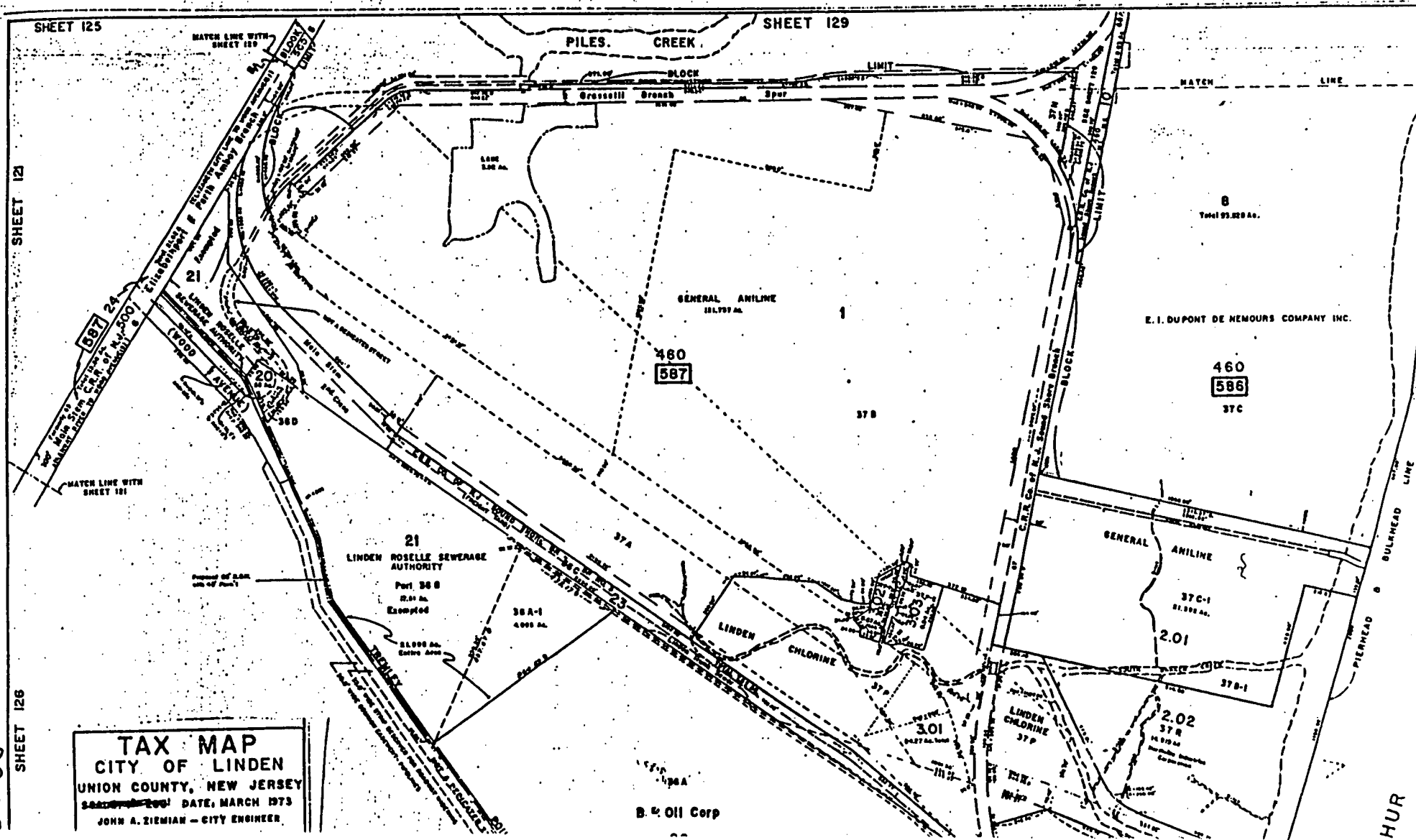
Activity: Produced ethylene oxide.

Raw Materials: Ethylene gas, platinum and silver catalyst.

Byproducts: Glycols



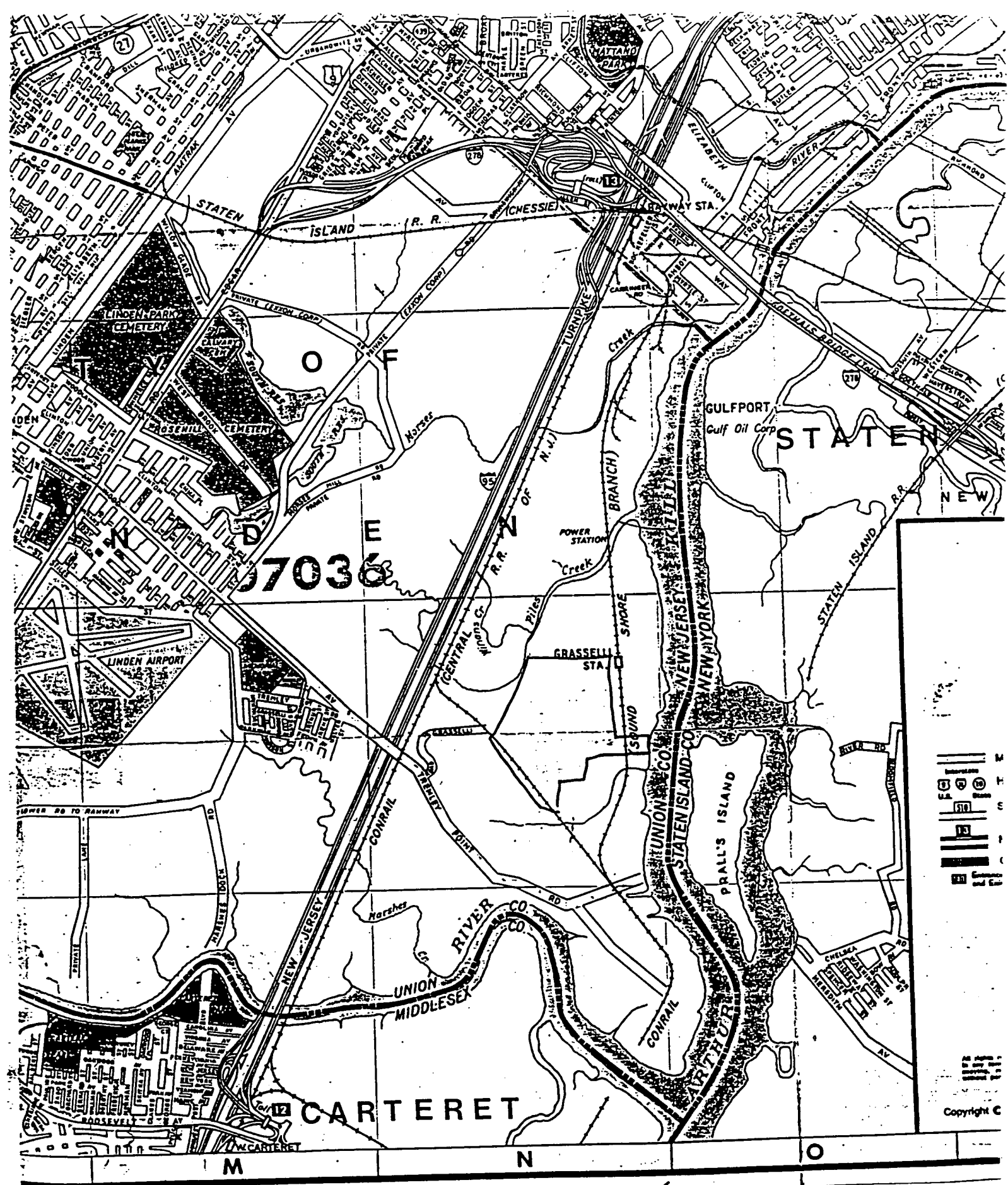
SITE MAP
MAP



TAX MAP
CITY OF LINDEN
UNION COUNTY, NEW JERSEY
DATE, MARCH 1973
JOHN A. ZIEMIAN - CITY ENGINEER

B. & O. Corp

HUR



7036

CARTERET

UNION COUNTY ROAD MAP
MAP 4

TABLE 2-13

RAW MATERIALS USED IN MANUFACTURING
PROCESSING —1988

GAF Chemicals Corporation, Linden Plant

Acetic AC GL Color Form
Acetic Anhydride PUR
Acrolein Tech
Acrylic Acid, Glacial
Additive GLY
Alfol 6
Alfol 810
Alfol 1012
Alfol 1218
Alfol 1620
Amberlyst 15
Amberlyst XN-1010
Am ETH Ethanolamine
Ammonia Anhy (CYL)
Ammonia Anhy (H)
Ammonia Anhy (I)
Amm Chloride Fine
Amm Sulphate
Antifoam B
Antifoam C-PG
Antifoam Y 30
Benzene
Benzoyl Perox 70
Benzyl Chloride
Boric Acid
Boron Trifluoride (CYL)
Boron Trifluoride Ether
Butanol
Butyl Cellosolve
T-Butyl Perox Pivalate
Carbonyl Iron Powder HFF
Castor oil
Caustic Pot FLK
Caustic Pot Pellets
Caustic Soda Beads
Caustic Soda FLK
Caustic Soda LIQ 25
Caustic Soda LIQ 100
CHL Acetate AC
Citric Acid
Coco Fatty AC C-108
Coco Fatty AC C-120
Coconut Amine Dist
Coconut Fat AC STR

Decyl ALC
Dibutyl 4 Cresol CP
Di-t-butyl Perox
Dicyanid
Diethanolamine
Dieth Sulfate
Di-isobutylene
Dimeth Ameth Methacrylate
Dimeth Am Eth Meth XLF
Dimethylamine
Dinonyl Phenol Dist
Dodecyl Phenol
Dow Corning 193 Surfactant
Emersol 132 Steric Acid
Emersol 153 Steric Acid
Epal 810
Epal 1012
Epal 1275
Epon 828
Ethanol SD-3A
Ethylamine
Ethylene Glycol Meth Ether
Ethylene Glycol
Ethylene Oxide
Ethylene Oxide (CYL)
Formal 37K
Gluteraldehyde 50% Aqua
Golpanol Boz
Groco 55-1
Heptane, Normal
1 Hexadecene
Hexane
1-6 Hexanediol Diacrylat
Hexyl ALC
Hydrogen Perox 35
Hydrogen in Pipeline 1
2 Hydroxyethyl Acrylate
Hypophosphorous AC 50
Iodine FIN GRD CNS
Iodine Prill
Ionol Antioxidant
Irgacure 184
Irgacure 651
Irganox 1010

Isoamyl Alcohol
Isobutyene
Isodor P-4542
Isophrone Di-isocyanate
Isopropanol Cosmetic K
Isopropanol
Isopropyl Alcohol, ANHY
Kathon C6 Preservative
Latic Acid 88
Lauryl Alcohol Mixed
Lauryl Alcohol Tech
Lauryl Special
Maleic Anhy
Methamine Anhy
Methanol
Micro Cell B
Micro Cell "C"
Micro Cell E
Monoethanolamine
Murac Anhy CYCLS
Murac Anhy T/T
Murac CP
Nekal BX-78 SOLN NOP
Nitrogen Dry
Nonene
Nonyl Phenol
Olefin Frac C-20 C-24
Oleic Acid
Oleyl
Oleyl Alcohol Sub
Oleyl Amin T
Oleylamine Dist
Palmitic Acid
Pe Triacrylane
Phenol USP
Phenothiazine
Phos AC 85
Phos Oxy Chloride
Phos Pentoxide Mon
Phos Trichloride
Poly Glycidol
Poly Phos AC 115
Propylene Oxide
Rock Salt (Solar)

B



Preliminary Assessment

for

RCRA Corrective Action Program

GAF Linden
Dupont Rd. Foot of Wood Ave.
Linden, Union County, NJ

N. J. Department of Environmental Protection
Divisions of Environmental Quality
Waste Management
Water Resources

Prepared by the Division of Waste Management
Bureau of Hazardous Waste Planning &
Classification
November, 1985



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT

I. IDENTIFICATION
01 STATE 02 SITE NUMBER

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site) GAF		02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER Dupont Rd Foot of Wood Ave.			
03 CITY Linden	04 STATE NJ	05 ZIP CODE 0703	06 COUNTY Union	07 COUNTY CODE 20	08 CONG DIST
09 COORDINATES LATITUDE 40 36 43.0		LONGITUDE 74 12 50.0			

10 DIRECTIONS TO SITE (Starting from nearest public road)

III. RESPONSIBLE PARTIES

01 OWNER of property GAF		02 STREET (Number, name, road name) 1361 ALPS Rd.			
03 CITY Wayne	04 STATE NJ	05 ZIP CODE 07470	06 TELEPHONE NUMBER (201) 668-3504		
07 OPERATOR (If known and different from owner)		08 STREET (Number, name, road name)			
09 CITY	10 STATE	11 ZIP CODE	12 TELEPHONE NUMBER ()		
13 TYPE OF OWNER (Check one) <input checked="" type="checkbox"/> A. PRIVATE <input type="checkbox"/> B. FEDERAL: _____ (Agency name) <input type="checkbox"/> C. STATE <input type="checkbox"/> D. COUNTY <input type="checkbox"/> E. MUNICIPAL <input type="checkbox"/> F. OTHER: _____ (Specify) <input type="checkbox"/> G. UNKNOWN					

14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply)

☐ A. RCRA 3001 DATE RECEIVED: ____/____/____ ☐ B. UNCONTROLLED WASTE SITE (RCRA 103) DATE RECEIVED: ____/____/____ ☐ C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION <input checked="" type="checkbox"/> YES DATE ____/____/86 LINO MONTH DAY YEAR		BY (Check all that apply) <input type="checkbox"/> A. EPA <input type="checkbox"/> B. EPA CONTRACTOR <input checked="" type="checkbox"/> C. STATE <input type="checkbox"/> D. OTHER CONTRACTOR <input type="checkbox"/> E. LOCAL HEALTH OFFICIAL <input type="checkbox"/> F. OTHER: _____ (Specify) CONTRACTOR NAME(S): _____			
02 SITE STATUS (Check one) <input checked="" type="checkbox"/> A. ACTIVE <input type="checkbox"/> B. INACTIVE <input type="checkbox"/> C. UNKNOWN		03 YEARS OF OPERATION 1900's Present <input type="checkbox"/> UNKNOWN BEGINNING YEAR ENDING YEAR			

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED
Mercury, Dichlorobenzene, Phenol, Toluene, Dioxane, Silver, Arsenic, Propylene, Oxide.
benzene

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION
Groundwater, soil and surface water contamination on site documented.

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Threats)
☐ A. HIGH (Immediate response required)
☐ B. MEDIUM (Response required)
☐ C. LOW (Inspect on time available basis)
☐ D. NONE (No further action needed - complete current inspection form)

VI. INFORMATION AVAILABLE FROM

01 CONTACT Robert Patel		02 OF (Agency/Owner name) NJDEP/BDWE		03 TELEPHONE NUMBER ()	
04 PERSON RESPONSIBLE FOR ASSESSMENT Richard Gervasio		05 AGENCY NJDEP	06 ORGANIZATION DHWM/BSA	07 TELEPHONE NUMBER 609 2927696	08 DATE ____/____/____ MONTH DAY YEAR

1. BASIC PROCESS/UNIT CHARACTERISTICS

			NO. OF UNITS OF THIS		KNOWN	RCRA/ NPDES	UNITS EXHIBITING OBSERVED OR
	1)SWMU TYPE	2)LOCATION	3)TYPE	4)AMOUNT/SIZE	5)ALLEGED	6)STATUS	7)SUSPECTED RELEASE
A. Landfill	A	I-4 J-8	2	6 acre 10-12 acre	Known	Registered	Observed
B. Surface Impoundment	B	N-9 I-8	2	Unknown	Alleged	None	Suspected
C. Waste Pile							
D. Land Treatment Unit							
E. Injection Well							
F. Incinerator							
TANKS							
G.1 Above Ground	G-1	M-9	1	6,000 gal.	Known	Permitted	None
G.2 Underground							
H. Container Storage Unit	H	6-7 H-6	2	Unknown	Known	Waiting approval in closure process	
I. Other	LWMP	N-9	1		Known	Permit	Observed

SUB
TYPE

Building #207

Hazardous Waste
container Storage

COMMENT

Building 207 ready for use drains blocked and door ways diked. Waiting for approval to be used.

Surface Impoundment

Area used to discharge arsenic acid waste from over head sewer line also iron sludge area now used to store building debris and drums.

Surface Impoundment

Area is now site of Waste Treatment Plant. Dilute sulfuric acid residue from alpha atrathraquiones which contain mercuric sulfate and traces of entrained metallic mercury drained from building #49 via drainage ditch system to this area known as tract #9.

ADDITIONAL COMMENTS

SITU
TYPE

COMMENT

N-9 Industrial Waste
Management Facility

Includes oil-water skimmer, to remove waste oil from waste lagoon. Oil storage tank-
6000 gal used to store skimmed waste water oil. Lagoon oil manifested off site
urned oil needs to be classified.

I-8 Old Landfill

Observed release to both ground water and soil stand pipes on landfill have oil on wa
GAF admits to dumping chemicals off spec product, also alledged dumping of clorinated
Hydrocarbons.

I-4 Drum Landfill

Alledged dumping of arsenic acid residue and iron sludges from sulfunicated
anthraquiones, process, also buried drums visable on various inspections.

H-6 Building 53
Hazardous Waste Container
Storage

This building in closure porcess. Building clear of all waste. Proposed new storage
area Building 207 ready, not approved.

SOLID WASTE MGMT. UNIT Old LandfillLOCATION J-8

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE 02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☒ A. GROUNDWATER CONTAMINATION 02 ☒ OBSERVED (DATE: 1983) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 12 04 NARRATIVE DESCRIPTION
Monitoring wells of LF show metals, VO contamination standpipes in surficial fill on LF contain oily liquid layer.

01 ☐ B. SURFACE WATER CONTAMINATION 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION
Landfill in existence before IWMF, b contaminates from LF run to Authur Kill and Piles Creek via ditch system.

01 ☐ C. CONTAMINATION OF AIR 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 ☐ E. DIRECT CONTACT 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 ☐ F. CONTAMINATION OF SOIL 02 ☐ OBSERVED (DATE: 1983) ☐ POTENTIAL ☐ ALLEGED
03 AREA POTENTIALLY AFFECTED: 12 04 NARRATIVE DESCRIPTION
(Acres)
Soil boring in LF show metals VO contamination.

01 ☐ G. DRINKING WATER CONTAMINATION 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 ☐ H. WORKER EXPOSURE/INJURY 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 WORKERS POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 ☐ I. POPULATION EXPOSURE/INJURY 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

SOLID WASTE MGMT. UNIT Old Landfill

LOCATION

J-8



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE 02 SITE

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☐ J. DAMAGE TO FLORA
04 NARRATIVE DESCRIPTION02 ☒ OBSERVED (DATE: 1986)☐ POTENTIAL☒ ALLEGED

No growth on large portions of landfill.

01 ☐ K. DAMAGE TO FAUNA
04 NARRATIVE DESCRIPTION (INCLUDE NATURE OF LESIONS)02 ☐ OBSERVED (DATE: _____)☐ POTENTIAL☒ ALLEGED01 ☐ L. CONTAMINATION OF FOOD CHAIN
04 NARRATIVE DESCRIPTION02 ☐ OBSERVED (DATE: _____)☐ POTENTIAL☒ ALLEGED01 ☐ M. UNSTABLE CONTAINMENT OF WASTES
(Spills, Punctured Storage tanks, Leaking drums)02 ☒ OBSERVED (DATE: _____)☐ POTENTIAL☒ ALLEGED

03 POPULATION POTENTIALLY AFFECTED: _____

04 NARRATIVE DESCRIPTION

Dumping of chemical wastes on LF ground water soils contaminated. Standpipes have oily layer of water

01 ☐ N. DAMAGE TO OFFSITE PROPERTY
04 NARRATIVE DESCRIPTION02 ☐ OBSERVED (DATE: _____)☐ POTENTIAL☒ ALLEGED01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs
04 NARRATIVE DESCRIPTION02 ☐ OBSERVED (DATE: _____)☐ POTENTIAL☒ ALLEGED01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING
04 NARRATIVE DESCRIPTION02 ☒ OBSERVED (DATE: 1970)☒ POTENTIAL☒ ALLEGED

Facility admits to dumping of chemical wastes including highly chlorinated hydrocarbons.

Q5 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: _____

IV. COMMENTS

V. SOURCES OF INFORMATION (Cite specific references e.g., state files, sample analysis, reports)

POTENTIAL H.
PRELIMINARY
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTSI IDENTIFICATION
01 STATE 02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 <input type="checkbox"/> A. GROUNDWATER CONTAMINATION 03 POPULATION POTENTIALLY AFFECTED: _____	02 <input type="checkbox"/> OBSERVED (DATE: <u>1983</u>) 04 NARRATIVE DESCRIPTION Monitoring wells down grade of LF show metals, VO contamination.	<input type="checkbox"/> POTENTIAL	<input type="checkbox"/> ALLEGED
01 <input type="checkbox"/> B. SURFACE WATER CONTAMINATION 03 POPULATION POTENTIALLY AFFECTED: _____	02 <input type="checkbox"/> OBSERVED (DATE: _____) 04 NARRATIVE DESCRIPTION Area was site of arsenic acid disposed before Piles Creek was dammed at Dupont Ave. it intruded into this area and was allegedly affected.	<input type="checkbox"/> POTENTIAL	<input type="checkbox"/> ALLEGED
01 <input type="checkbox"/> C. CONTAMINATION OF AIR 03 POPULATION POTENTIALLY AFFECTED: _____	02 <input type="checkbox"/> OBSERVED (DATE: _____) 04 NARRATIVE DESCRIPTION	<input type="checkbox"/> POTENTIAL	<input type="checkbox"/> ALLEGED
01 <input type="checkbox"/> D. FIRE/EXPLOSIVE CONDITIONS 03 POPULATION POTENTIALLY AFFECTED: _____	02 <input type="checkbox"/> OBSERVED (DATE: _____) 04 NARRATIVE DESCRIPTION	<input type="checkbox"/> POTENTIAL	<input type="checkbox"/> ALLEGED
01 <input type="checkbox"/> E. DIRECT CONTACT 03 POPULATION POTENTIALLY AFFECTED: _____	02 <input type="checkbox"/> OBSERVED (DATE: _____) 04 NARRATIVE DESCRIPTION	<input type="checkbox"/> POTENTIAL	<input type="checkbox"/> ALLEGED
01 <input type="checkbox"/> F. CONTAMINATION OF SOIL 03 AREA POTENTIALLY AFFECTED: <u>6</u> (Address)	02 <input type="checkbox"/> OBSERVED (DATE: _____) 04 NARRATIVE DESCRIPTION Alleged dumping of drummed material and arsenic acid residues overflow from over head sewer line	<input type="checkbox"/> POTENTIAL	<input type="checkbox"/> ALLEGED
01 <input type="checkbox"/> G. DRINKING WATER CONTAMINATION 03 POPULATION POTENTIALLY AFFECTED: _____	02 <input type="checkbox"/> OBSERVED (DATE: _____) 04 NARRATIVE DESCRIPTION	<input type="checkbox"/> POTENTIAL	<input type="checkbox"/> ALLEGED
01 <input type="checkbox"/> H. WORKER EXPOSURE/INJURY 03 WORKERS POTENTIALLY AFFECTED: _____	02 <input type="checkbox"/> OBSERVED (DATE: _____) 04 NARRATIVE DESCRIPTION	<input type="checkbox"/> POTENTIAL	<input type="checkbox"/> ALLEGED
01 <input type="checkbox"/> I. POPULATION EXPOSURE/INJURY 03 POPULATION POTENTIALLY AFFECTED: _____	02 <input type="checkbox"/> OBSERVED (DATE: _____) 04 NARRATIVE DESCRIPTION	<input type="checkbox"/> POTENTIAL	<input type="checkbox"/> ALLEGED

SOLID WASTE MGMT. UNIT Drum Landfill

LOCATION

I-4



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE 02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☐ J. DAMAGE TO FLORA
04 NARRATIVE DESCRIPTION02 ☒ OBSERVED (DATE 1986)☐ POTENTIAL☐ ALLEGED

No growth at landfill.

01 ☐ K. DAMAGE TO FAUNA
04 NARRATIVE DESCRIPTION (Include names of species)02 ☐ OBSERVED (DATE: _____)☐ POTENTIAL☐ ALLEGED01 ☐ L. CONTAMINATION OF FOOD CHAIN
04 NARRATIVE DESCRIPTION02 ☐ OBSERVED (DATE: _____)☐ POTENTIAL☐ ALLEGED01 ☐ M. UNSTABLE CONTAINMENT OF WASTES
(Spills, Pallets, Stacking methods, Leaking drums)02 ☐ OBSERVED (DATE 1970)☐ POTENTIAL☐ ALLEGED

03 POPULATION POTENTIALLY AFFECTED: _____

04 NARRATIVE DESCRIPTION

Area used for the disposal of arsenic acid residues and alleged drum disposal.

01 ☐ N. DAMAGE TO OFFSITE PROPERTY
04 NARRATIVE DESCRIPTION02 ☐ OBSERVED (DATE: _____)☐ POTENTIAL☐ ALLEGED

Arsenic acid residues entered Piles Creek with the flowing of tides.

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs
04 NARRATIVE DESCRIPTION02 ☐ OBSERVED (DATE: _____)☐ POTENTIAL☐ ALLEGED01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING
04 NARRATIVE DESCRIPTION02 ☐ OBSERVED (DATE 1970)☐ POTENTIAL☐ ALLEGED


Arsenic acid residues over flowed to this area from special sewer area

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: _____

IV. COMMENTS

V. SOURCES OF INFORMATION (See specific references at 9. Make this sample analysis relevant)

 POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS		I. IDENTIFICATION	
		01 STATE	02 SITE NUMBER
II. HAZARDOUS CONDITIONS AND INCIDENTS			
01 <input type="checkbox"/> A. GROUNDWATER CONTAMINATION 03 POPULATION POTENTIALLY AFFECTED: _____		02 <input type="checkbox"/> OBSERVED (DATE: _____) 04 NARRATIVE DESCRIPTION	<input type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED
01 <input type="checkbox"/> B. SURFACE WATER CONTAMINATION 03 POPULATION POTENTIALLY AFFECTED: _____		02 <input type="checkbox"/> OBSERVED (DATE: _____) 04 NARRATIVE DESCRIPTION	<input type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED
01 <input type="checkbox"/> C. CONTAMINATION OF AIR 03 POPULATION POTENTIALLY AFFECTED: _____		02 <input type="checkbox"/> OBSERVED (DATE: _____) 04 NARRATIVE DESCRIPTION	<input type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED
01 <input type="checkbox"/> D. FIRE/EXPLOSIVE CONDITIONS 03 POPULATION POTENTIALLY AFFECTED: _____		02 <input type="checkbox"/> OBSERVED (DATE: _____) 04 NARRATIVE DESCRIPTION	<input type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED
01 <input type="checkbox"/> E. DIRECT CONTACT 03 POPULATION POTENTIALLY AFFECTED: _____		02 <input type="checkbox"/> OBSERVED (DATE: _____) 04 NARRATIVE DESCRIPTION	<input type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED
01 <input type="checkbox"/> F. CONTAMINATION OF SOIL 03 AREA POTENTIALLY AFFECTED: _____ (Address)		02 <input type="checkbox"/> OBSERVED (DATE: _____) 04 NARRATIVE DESCRIPTION	<input type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED
01 <input type="checkbox"/> G. DRINKING WATER CONTAMINATION 03 POPULATION POTENTIALLY AFFECTED: _____		02 <input type="checkbox"/> OBSERVED (DATE: _____) 04 NARRATIVE DESCRIPTION	<input type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED
01 <input type="checkbox"/> H. WORKER EXPOSURE/INJURY 03 WORKERS POTENTIALLY AFFECTED: _____		02 <input type="checkbox"/> OBSERVED (DATE: _____) 04 NARRATIVE DESCRIPTION	<input type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED
01 <input type="checkbox"/> I. POPULATION EXPOSURE/INJURY 03 POPULATION POTENTIALLY AFFECTED: _____		02 <input type="checkbox"/> OBSERVED (DATE: _____) 04 NARRATIVE DESCRIPTION	<input type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED

SOLID WASTE MGMT. UNIT IWMF Industrial Waste LOCATION _____

Management Facility



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

1 IDENTIFICATION

01 STATE 02 DATE RECEIVED

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☐ A. GROUNDWATER CONTAMINATION 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION
Area is alleged to have received arsenic acids, mercury compounds and from sludges open ditch system before Plant was built ground water contamination possible

01 ☐ B. SURFACE WATER CONTAMINATION 02 ☐ OBSERVED (DATE: 1977-79-81) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION
IWMF has exceeded discharge limits on these occasions and has been sited by EPA and NJDEP/DWR

01 ☐ C. CONTAMINATION OF AIR 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 ☐ E. DIRECT CONTACT 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 ☐ F. CONTAMINATION OF SOIL 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 AREA POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 ☐ G. DRINKING WATER CONTAMINATION 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 ☐ H. WORKER EXPOSURE/INJURY 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 WORKERS POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 ☐ I. POPULATION EXPOSURE/INJURY 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

1. IDENTIFICATION	
01 STATE	02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☐ A. GROUNDWATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
Discharge of arsenic acid wastes from area head sewer line and burned drums observed in this area lead to concern of groundwater.

01 ☐ B. SURFACE WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
Arsenic acid discharged to this area overflowed to area affected by Piles Creek.

01 ☐ C. CONTAMINATION OF AIR
03 POPULATION POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS
03 POPULATION POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ E. DIRECT CONTACT
03 POPULATION POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ F. CONTAMINATION OF SOIL
03 AREA POTENTIALLY AFFECTED: _____ (Acres)
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
Dumping of arsenic acids and iron sludges. Also drum now stored in area possible source of soil contamination.

01 ☐ G. DRINKING WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ H. WORKER EXPOSURE/INJURY
03 WORKERS POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ I. POPULATION EXPOSURE/INJURY
03 POPULATION POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

SOLID WASTE MANAGEMENT UNIT	LOCATION	SUBSTANCE NAME	TYPE	PHYSICAL STATE	CHARACTERISTICS	QUANTITY	CONCENTRATION
I							
IWMF	N-9	Phenol arsenic	Metal	Liquid, solid	Toxic		
A	J-8	Phenol arsenic cyanide Dichlorobenzene Trichlorobenzene Bis (Chloromethyl ether)	Metals VO's Basic Neutrals Acid compounds	Liquid Solid			
	I-4	arsenic, Phenol	Metals				
	B	arsenic, Phenol Mercury					
N-9	B	Arsenic, Phenol, Mercury					

SWMU LEGEND:

A= Landfill

B= Surface Impoundment

C= Waste Pile

D= Land Treatment

E= Injection Well

F= Incinerator

G.1= Tank, Above Ground

G.2= Tank, Underground

H= Container Storage Unit

I= Other

SOURCES OF INFORMATION:

I. Conclusions and Recommendations

Facility: GAF Linden

A. Conclusions:

- 01 Identify units which have had the potential for releases.
- 02 Identify units which have had observed releases.

B. Recommendations:

- 01 Should this facility be required to perform an RI/FS?
(yes/no) YES
More data needed. Specify.

The above conclusions and recommendations are accepted for purposes of the completion of RCRA facility assessment requirements.

Signed:

Date

R. Gervasio
BSA Preparer

2-9-87

DHWM-BHWE

DHWM-BHWP

DWR

Melinda Powers, Sect Chief
DHWM-BCM

8-3-87

I. DOCUMENTS REVIEWED

DOCUMENT NAME	DATE	AUTHOR	LOCATION	NO. P.
1. Hazardous Waste Container Storage Facility closure plan	5-5-86	ERM/Northeast	65 Prospect St. Trenton	
2. Supplemental information/compliance Plan	12-15-55	A ware Inc.	"	
3. EPA/EPIC		EmSL Las Vegas	"	
4. Hydrogeologic Investigation/ GAF Linden	4-15-83	ERM/NE	"	205
5. EPA Sampling Report		J. Dresky	"	
6. Reg II		Contrac Corp.	"	30
7. NJDEP Administration			"	
8. Consent Order NJDEP/DSW-DGW	6-13-86	NJDEP/DWR	"	18
9. NJDEP response to comments from Awar submitted/Draft Permit	2-25-86	A. Schiffman NJDEP/	"	1
10. NJ 0000017				
11. GAF response 3004(u) 390 RCRA Amendments	5-26-85	Grier Andres Giger Atticles GAF	"	
12. RCRA Permits A&D Permits GAF		Santo Guillerma GAF	401 E. State St Trenton	
13. Memo from W. Olmick	1-13-82	W. Olmick	65 Prospect Trenton	5
14. Letter to EPA	2-19-82	F. Inzarrilo	"	
15.				

II. OFFICES CONTACTED

OFFICE	CONTACT NAME	CONTACT TELE. NO.	CONTACT DATE
1. NJDEP/ESWB	R. Patel		
2. NJDEP/DWR	R. Casper		
3. NJDEP/DWR	J. Schinifser		
4.			
5.			
6.			
7.			
8.			
9.			
10.			

I. Conclusions and Recommendations

Facility: _____

A. Conclusions:

01 Identify units which have had the potential for releases.

02 Identify units which have had observed releases.

B. Recommendations:

01 Should this facility be required to perform an RI/FS?

(yes/no) _____

More data needed. Specify.

The above conclusions and recommendations are accepted for purposes of the completion of RCRA facility assessment requirements.

Signed:

Date

BSA Preparer

DHWM-BHWE

DHWM-BHWP

DWR

WASTE LAGOON
GROUND-WATER MONITORING
LCP CHEMICALS, NEW JERSEY, INC.
LINDEN, NEW JERSEY

February 1982

Geraughty & Miller, Inc.
Consulting Ground-Water Geologists and Hydrologists
North Shore Atrium
6800 Jericho Turnpike
Syosset, New York 11791

ATTACHED B

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APPENDICES

- A. Monitoring Well Boring Logs and Construction Data
- B. Analytical Protocol for Mercury in Water and Soils
- C. Administrative Consent Order of August 31, 1981 by State of New Jersey Department of Environmental Protection to Linden Chemicals & Plastics, Inc.

FIGURE

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WASTE LAGOON
GROUND-WATER MONITORING
LCP CHEMICALS, NEW JERSEY, INC.
LINDEN, NEW JERSEY

INTRODUCTION

LCP Chemicals, New Jersey, Inc. (LCP) retained Geraghty & Miller, Inc. to conduct ground-water monitoring at a waste disposal site at their Linden, New Jersey, plant. The plant produces chlorine by the electrolytic decomposition of brine using metallic mercury as an electrode. Mercury concentrations in the process wastes are high enough so that the wastes are hazardous as defined in the Resource Conservation and Recovery Act (RCRA) of 1976.

In order to comply with both the RCRA monitoring well requirements and a consent agreement with the State of New Jersey, LCP installed monitoring wells at its waste facility. This facility consists of an active brine sludge lagoon and a small, experimental lagoon used for pilot studies of the Chem-fix process for waste stabilization.

SUMMARY OF FINDINGS AND CONCLUSIONS


1. Geologic data from soil borings and monitoring wells show that the study area is underlain by 30 to 50 feet of unconsolidated glacial till, organic sediments, peat, and artificial fill. These deposits are generally of low or moderately low permeability and rest on bedrock, the Brunswick shale member of the Triassic Newark Group.

2. The six monitoring wells installed near the LCP brine-sludge lagoon yielded ground-water samples with mercury levels below the U.S. Environmental Agency (USEPA) Primary Interim Drinking Water Standard of 0.002 mg/L (milligrams per litre).

3. Soil samples collected in the monitoring well borings, selected surface sites, and the South Branch Creek bed showed total mercury concentrations between 0.26 and 1,580 mg (milligrams) per kg (kilogram) of soil ppm (parts per million) as received.

4. Shallow, fill soils contained the most mercury (up to 1,580 ppm) while undisturbed, deeper soils had much lower concentrations (0.4 to 6 ppm). Intermediate concentrations (10 to 40 ppm) were found in organic sediments derived from marsh deposits taken at depths up to 17 feet below grade.

5. ~~Analysis of soil samples for mercury indicates ambient levels for this metal in undisturbed (uncontaminated), low permeability deposits up to approximately 5 ppm in this area.~~

ATTACHMENT 

6. Higher levels of soils mercury, up to 40 ppm, indicate contamination by industrially derived fill materials, surface disposal of mercury compounds and/or selective fixation of mercury in organic sediments.

7. The difference between mercury levels in ground-water and soils samples arises because the soil components (silts, clays, and organic matter) tie up mercury through adsorption and complexation. Furthermore, many mercury compounds have low solubilities in water.

8. Water-level data do not reveal present leakage of water from the ~~brine~~ brine sludge lagoon via the subsurface.

9. Sources of mercury found in streambed sediments from South Branch Creek cannot be determined solely on the basis of soils or ground-water quality data. Potential sources, besides LCP's waste lagoon, may be atmospheric mercury "fallout," runoff, percolation through fill materials, and tide water from the Arthur Kill.

↗
How about a release by LCP?

RECOMMENDATIONS

1. LCP should maintain the monitoring wells in good condition for continued sampling as prescribed by RCRA. Care should be taken to avoid contamination of the wells.
2. Re-sampling and analysis of ground water (and soils, if necessary) should be performed according to the protocol currently in use (see Appendix B). All sampling procedures should be kept as constant as possible so that data from different sampling periods can be compared.
3. Water levels should be measured in each well prior to sampling using the "wetted tape" method. The date, time, tidal stage, weather conditions, and other pertinent data should be recorded along with each measurement.
4. If it becomes necessary to abandon any of the monitoring wells, closure must be performed by a licensed New Jersey water-well driller and in accord with state specifications.

ATTACHMENT B

THE HYDROGEOLOGIC INVESTIGATIONPurpose and Scope

The New Jersey Department of Environmental Protection (NJDEP) administrative Consent Order of July 31, 1981 requires that LCP implement a monitoring program to evaluate the release of mercury and other metals to the ambient environment (see Appendix C). The monitoring program covers air, surface and ground water, and soils obtained from borings done on land and in the streambed. Geraghty & Miller, Inc., was retained to design and supervise the entire program except for the air monitoring studies, which were conducted by LCP.

The soil borings and monitoring well installations were made at five sites in the vicinity of the waste lagoons. Soils samples were described in detail with respect to lithologic and hydrologic characteristics and were retained for chemical analysis. Individual monitoring wells were screened in the most permeable soil materials penetrated at each boring site. Where more than one permeable zone was encountered, a multiple (cluster) well arrangement was used. Soil samples from four surface sites and a streambed site were also collected for mercury analysis. The soil boring, well construction and analytical procedures for water and soils chemistry followed USEPA procedures (see Appendix B) and were approved by NJDEP prior to field work.

Monitoring Well Installation

Six monitoring wells were installed between September 29 and October

2, 1981 by H.P. Drilling of National Park, New Jersey, a licensed New Jersey well driller. Drilling permits were obtained for each well in accordance with New Jersey State law. Permit numbers are listed on each well log given in Appendix A.

The monitoring wells were drilled to consolidated bedrock which was encountered between 42.3 and 48.5 feet below grade at the sites shown in Figure 1. The drilling was done by cased borings (Wells 1, 1A, 2, and 3) and hollow-stem auger (Wells 4 and 5) with split-spoon core samples collected at 5-foot intervals or as directed. Water used during drilling was from an approved, potable water source. A sample of this water has been analyzed by LCP.

The monitoring wells are constructed of 1.5-inch diameter PVC pipe and have 30 to 50 feet of 1.5-inch diameter PVC screen; the screen length depended on the geologic deposits encountered. The screen was set in the drilled hole and packed with clean sand of suitable grade for the 0.020-inch screen slot opening. Bentonite seals were placed above and below the screen zone to prevent vertical flow in the drilled hole near the screen. The remaining open hole around the well casing was filled with cement grout. The top of each well is protected by a vented cap and steel stand-pipe which extends at least 1.5 feet above grade and is embedded in the cement grout. Well 5 was finished in a curb box because it was located in a high access area.

Sediment and water removed from the borings while drilling and from the finished monitoring wells were considered to be contaminated. There-

fore, they were deposited in the LCP waste lagoon.

After each monitoring well was completed, all temporary casings, tools, and equipment coming in contact with soils and water were cleaned with uncontaminated water to prevent cross-contamination.

Sampling Methods

Sediment and water samples collected throughout the investigation were delivered immediately after collection to the laboratory at LCP. Geraghty & Miller, Inc., and LCP have a list of samples collected, handled, and analyzed.

Sediment samples were collected while drilling with a split-spoon core barrel (2-inch outside diameter and 24 inches long) and placed in airtight, 8-ounce, clean, glass containers. Two sediment samples were collected from each spoon and are equally representative of the geologic deposits penetrated by the spoon. Water samples were collected from monitoring wells using a peristaltic pump after the wells were developed with a guzzler pump or bailer. Because the formation yield was typically very low, most wells were bailed dry and allowed to recover sufficiently to yield the required sample volume. For the few wells that could be pumped, at least ten times the volume of standing water in the well was removed before sampling as recommended by USEPA.

All tubing on the peristaltic pump was changed between samplings to prevent cross-contamination. Water samples were filtered immediately after collection by LCP laboratory personnel with a 0.45 micron (Millipore-type)

ATTACHMENT B

filter and placed in a container, pre-treated with nitric acid to preserve the sample for metals analysis. Two quart-size water samples were collected from each well. Water samples were checked for temperature, pH, and specific conductance immediately after collection.

Hydrogeology

The site is located on Holocene and Pleistocene glacial deposits which thinly cover Triassic bedrock, the Brunswick Formation. The geology is typical of that recorded in eastern Union County by Nemickas (1976).

Unconsolidated geologic deposits in the study area can be separated in four distinct sedimentary units. From youngest to oldest, they are:

- Unit A - Miscellaneous fill deposits
- Unit B - Dark gray, organic clay
- Unit C - Well sorted sands intercalated with poorly sorted gravelly sands
- Unit D - Red-brown, tight silty clay, clay, and gravelly clay

The permeabilities of the four units varies because of differences in particle size, packing, and sorting. Observations of the split-spoon samples provide information on the relative permeabilities of these units (Table 1). A description of each unit follows.

Unit A is thin, but covers the study area continuously. It is a heterogeneous mixture of silt, sand, and gravel-sized particles with artificial components, such as slag, crushed stone, and brick. This fill layer varies in thickness from 4.5 feet near the tidal creek to 13.5 feet upgradient of the waste lagoon. The age, source and overall composition of this unit is unknown but was in place before LCP occupied the site. No informa-

ATTACHMENT B

tion about the unit was available in records from the previous plant operator, GAF Corporation. Soil boring records from Hazen and Sawyer (1969) covering the general plant area show this unit to be extensive.

Due to the assortment of grain sizes and tight packing, permeabilities are relatively low. However, the base of the fill appears to be saturated. Well 1A was screened only at the base of the fill and top of Unit 8, since this was recognized to be a thin, but semi-permeable zone.

Unit 8 is characterized by a dark gray clay with organic matter (tidal grasses) appearing throughout. Thin (2- to 12-inch) layers of brown peat are present near the top of this unit. Lenses of gray silt are also present but are generally thin and horizontally limited.

The organic clay is very cohesive and dry when examined in the sample spoons and did not yield significant water during drilling. This unit is present at all sites except five, where a dark gray, organic silty sand with pelecypods and gastropods, is found at the same horizon. This silty sand probably represents a tidal channel where water movement during the time of deposition was faster than in the rest of the area which was a tidal flat.

Unit C is present at well Sites 3, 4, and 5 and varies in thickness from 4.5 to 18 feet. This unit consists of well-sorted sand layers separated by poorly sorted gravelly sand layers. However, they are relatively thin, separated by tight, poorly sorted layers (where present) and are not present at all sites. It appears that this unit is of limited stratigraphic

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ic and lateral extent in this area.

Unit D is present at all sites and varies in thickness from about 14 to 29 feet. This unit is a till which is a heterogeneous mixture of particles deposited by a glacier. The upper part of this till unit is a silty clay or clayey silt with occasional occurrences of pebbles and cobble gravel. The middle horizons are composed predominantly of clay, with other sized particles present in trace amounts. The lower horizons above the bedrock surface are very coarse with cobbles and pebbles floating in a tight, clay matrix. The permeability of this unit is very low due to poor sorting of grain sizes, predominance of clay-sized particles, and tight packing of the individual grains. Wells screened in this unit yield water sparingly and recover very slowly after evacuation.

Bedrock was intercepted between 42.3 and 48.5 feet at the well sites. Clasts of Brunswick-type lithologies (siltstone and shale) were found in the coarse till above the bedrock surface.

Table 2 summarizes where each well has been screened with respect to geologic units present at the site.

Water and Soils Chemistry

Water samples bailed from each monitoring well were analyzed by LCP's laboratory for dissolved mercury according to approved procedures. Results are shown in Table 3. Water samples were also sent to Princeton Testing Laboratory to confirm the mercury analyses and to provide results for calcium, barium, and iron. These results appear in Table 4.

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Table 1. Permeabilities of Various Units Under the LCP Site.

<u>Unit</u> ¹⁾	<u>Relative Permeability</u>	<u>Probable Range of K (feet per year)</u> ²⁾
A	Semi-permeable	0.1 -- 100
B	Low-permeability	0.01 - 10
C	Well sorted sands -- permeable	500
	Poorly sorted sands -- semi-permeable	0.1 - 500
D	Low-permeability	0.01 - 1

1) Units are defined in the text.

2) From Sherard, et al. (1963).

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Table 2. Units in Which Wells are Screened.

<u>Well No.</u>	<u>Screen Zone</u>	<u>Units Screened In</u>
1	18.5 - 38.5	D
1A	5 - 10	Bottom of A/top of B
2	18 - 28	Top of D
3	15 - 30	Bottom of B, C, and top of D
4	18 - 38	C/top of D
5	8 - 38	Bottom of A, B, C, and D

Table 3. Dissolved Mercury Concentrations in Ground-Water Samples (concentrations in mg/L or ppm).

<u>Well No.</u>	<u>Sampling Date</u>	
	<u>10-6-81</u>	<u>10-15-81</u>
1	<0.0002	0.0006
1A	<0.0002	0.0009
2	<0.0002	<0.0002
3	<0.0002	<0.0002
4	<0.0002	<0.0002
5	<0.0002	<0.0002

Samples analyzed by the LCP Laboratory, Linden, New Jersey.

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Table 4. Results of Ground-Water Quality Analyses (concentrations in mg/L or ppm).

Well No.	Calcium	Barium	Iron	Mercury
1	1,100	3.5	5.9	< 0.001
1A	2,700	7.0	0.10	< 0.001
2	1,000	3.0	2.2	< 0.001
3	800	3.0	0.10	< 0.001
4	500	2.5	0.06	< 0.001
5	500	2.0	0.50	< 0.001

Note: Samples were received for analysis on November 25, 1981 at the Princeton Testing Laboratory, Princeton, New Jersey.

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Soil samples from monitoring well borings and from the land surface were analyzed by the LCP laboratory for total desorbable mercury content. Samples were leached according to USEPA protocol and filtered. The filtrate was then analyzed for mercury. The results of soils mercury analyses from borings are given in Table 5.

Surface soil samples and a tidal creek bed sample were collected on October 15, 1981 by hand, retained and analyzed for total mercury in the same way as the other soil samples. Locations of these sampling sites are shown on Figure 1 and analytical results are given in Table 6.

The results of water and soils mercury analysis shows (1) ~~surface~~ ~~soil contamination with mercury which decreases with depth,~~ and (2) ~~ground~~ ~~water which is essentially free of mercury.~~ Both results indicate little, if any, subsurface migration of mercury from the brine sludge lagoon. Subsurface soil types and calculated permeability values do not appear to allow significant fluid migration from the lagoon. Furthermore, the settled brine sludge itself has very low permeability.

Elevated mercury values in soils collected at depths to a maximum of 12 to 15 feet below grade are more difficult to interpret and might relate to the composition of the fill materials used to reclaim the present industrial site from its past, tidal marsh condition. Ground-water samples from this zone do not contain high levels of mercury, indicating that the metal is bound to the soil particles. In general, the soils penetrated in the well borings (silts and clays predominating) would be expected to trap mercury resulting in the low mercury levels found in ground water.

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Table 5. Mercury Concentrations in Soil Boring Samples (depth in feet below grade; concentrations in ppm).

Sample	Depth	Mercury	Sample	Depth	Mercury
<u>Well 1</u>			<u>Well 2</u>		
1-1	0 - 2	225	2-1	0 - 2	68.1
1-2	5 - 7	17.4	2-2	5 - 7	2.1
1-3	10 - 12	1.72	2-3	10 - 12	1.0
1-4	15 - 17	1.3	2-4	15 - 17	0.32
1-5	20 - 22	1.04	2-5	20 - 22	0.91
1-6	25 - 27	0.89	2-6	25 - 27	0.26
1-7	30 - 32	2.81	2-7	30 - 32	0.34
1-8	35 - 37	1.74	2-8	35 - 37	0.34
1-9	40 - 42	0.82	2-9	40 - 42	0.79
<u>Well 3</u>			<u>Well 4</u>		
3- 1	0 - 2	101	4- 1	0 - 2	772
3- 2	5 - 7	528	4- 2	5 - 7	163
3- 3	10 - 12	9.12	4- 3	10 - 12	19.84
3- 4	15 - 17	0.68	4- 4	15 - 17	33.69
3- 5	20 - 22	1.00	4- 5	20 - 22	0.57
3- 6	25 - 27	0.40	4- 6	25 - 27	0.58
3- 7	30 - 32	1.18	4- 7	30 - 32	0.65
3- 8	35 - 37	0.48	4- 8	34 - 36	0.72
3- 9	40 - 42	0.85	4- 9	40 - 42	1.16
3-10	45 - 47	0.60	4-10	45 - 47	3.47
<u>Well 5</u>					
5- 1	0 - 2	35.71			
5- 2	5 - 7	33.39			
5- 3	10 - 12	37.02			
5- 4	15 - 17	1.99			
5- 5	20 - 22	5.73			
5- 6	25 - 27	0.83			
5- 7	30 - 32	5.28			
5- 8	35 - 37	0.42			
5- 9	40 - 42	0.60			
5-10	43.5 - 45.5	4.59			

Samples analyzed by the LCP Laboratory, Linden, New Jersey.

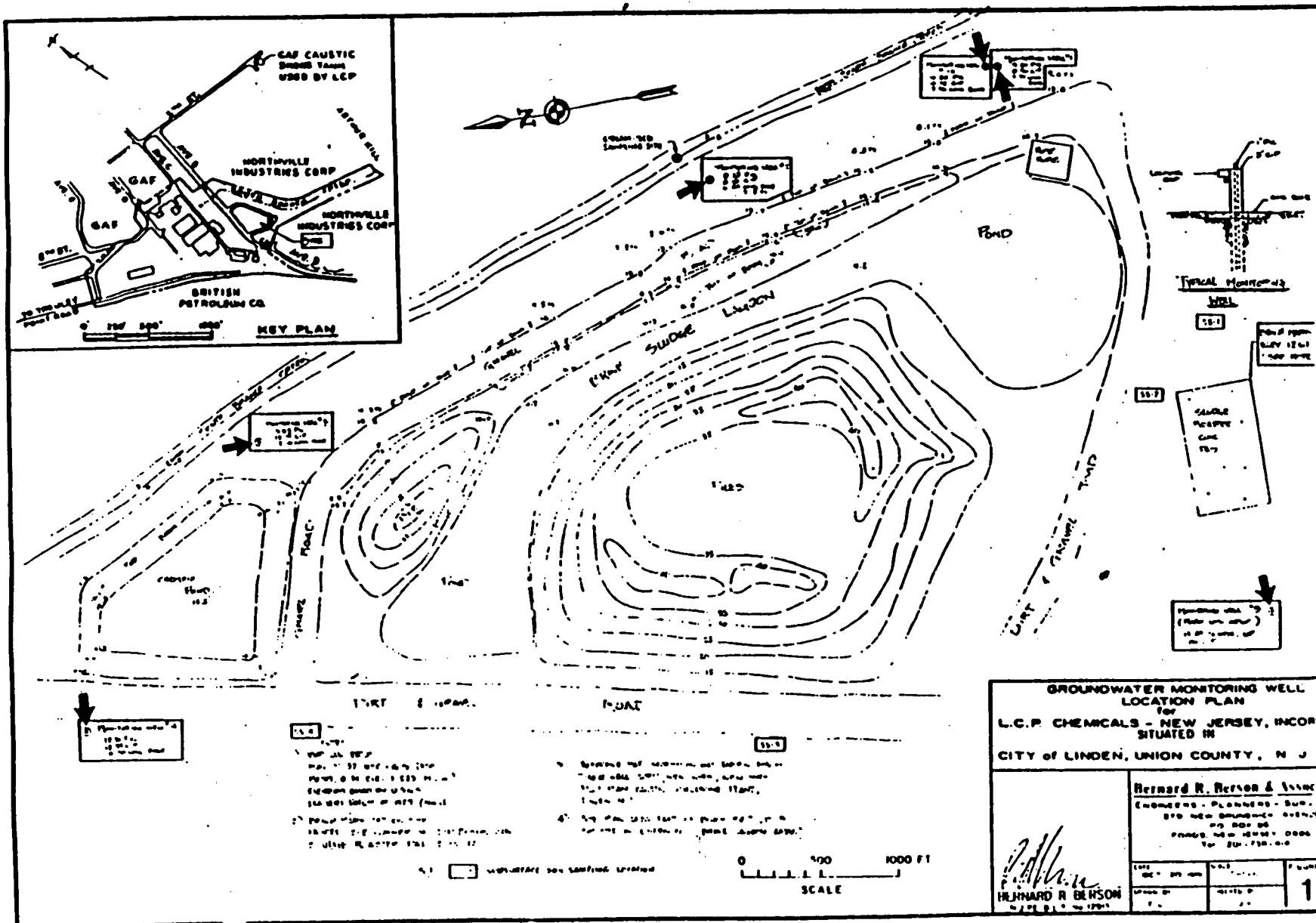
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Table 6. Mercury Concentrations in Surface Soil and
Tidal Creek Bed Samples (concentrations in ppm).

<u>Sample No.</u>	<u>Mercury</u>
S-1	558
S-2	27.45
S-3	1,070
S-4	1,580
Tidal Creek Bed	46.42

Samples analyzed by the LCP Laboratory, Linden, New Jersey.

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The meaning of the mercury levels found in soils at LCP is difficult to assess except in a relative sense. Natural mercury concentrations in rocks average from 0.01 to 20 ppm, with igneous rocks on the low end, and organic-rich sediments on the high end of this range (Wallace, et al., 1971). Higher concentrations may be found in areas of hydrothermal mineral deposition such as along major fault and orogenic belts. The mercury detected in soils beneath the study area most likely represent low solubility mercury compounds such as sulfides, phosphates or carbonates (Mortvedt, et al., 1972).


Pierce, et al. (1970) consider any mercury levels in soils exceeding 1 ppm, to be significant as evidence of mercury mineralization or surface contamination by mercuric wastes. Urbanized, industrial areas are known to have higher background levels of airborne mercury which is deposited on land by precipitation. Unfortunately, no published data on background levels of soil mercury in the Linden, New Jersey, area could be found.

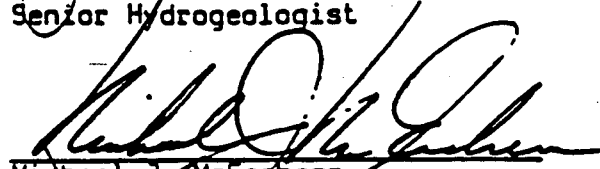
The naturally occurring glacial tills penetrated by the monitoring well borings do not appear to show evidence of mercury contamination by human activities. Mercury levels above 1 ppm, especially near the bedrock contact may relate to ancient hydrothermal activity associated with tectonics and igneous intrusion of the Triassic sediments (Brunswick shale) underlying the site. Organic deposits, such as the peat, show high mercury levels (about 10 to 30 ppm) down to a maximum depth of 17 feet below land surface. These levels probably reflect the strong organic chelation of mercury derived from several possible sources: from surface contamination.


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mercury wastes in the artificial fill, the decay of mercury containing minerals. and from mercury contained in atmospheric precipitation. Comparatively high mercury levels (up to 1,500 ppm) occurring in soils obtained at land surface are the likely result of present and/or prior land use.

Respectfully submitted,
GERAGHTY & MILLER, INC.


James DeMarinis
Senior Hydrogeologist


Michael J. McEachern
Senior Scientist


William J. Seevers
Vice President

February 11, 1982

ATTACHMENT 

LCP CHEMICALS
FOOT OF SOUTH WOOD AVENUE
LINDEN, UNION COUNTY, NJ
EPA ID# NJD079303020

I. FACILITY OWNERSHIP/BACKGROUND INFORMATION

OWNERSHIP:

LCP Chemicals purchased the 26 acre chlorine production facility in 1972 from General Aniline and Film Corp. (GAF) who owned the facility since 1942. E.I. Dupont owned the land, which according to aerial photographs was coastal marshland, prior to GAF.

LCP leases two sections of their property. The Western section near the guard house, is leased by Union Carbide. They have been leasing the building and property since 1959 when the property was owned by GAF. The other leased section is Building 231. This building is leased by Microcell Technologies, Inc. They have leased the building since 1987. LCP also leased to Kuehne Chemical from 1974 to 1981, who operated in the area that is adjacent to Building 220 (presently a parking lot).

FACILITY OPERATIONS:

GAF began producing chlorine in 1961 by utilizing a "mercury cell electrolysis process". The process involved the electrolysis of a sodium chloride (brine) solution in the presence of metallic mercury. The residual mercury-sodium solution is then used to hydrolize water, forming sodium hydroxide and hydrogen gas. The metallic mercury was partially recovered and recycled in a brine purification process. The remaining mercury tainted sludge was placed into the Brine Sludge Lagoon. When LCP purchased the property they continued to process chlorine using the same process method with a few minor modifications. In 1975, LCP modified the electrolysis process by switching from a graphite anode to a dimensionally stable anode. The components of this anode would allow the leaching of the mercury so that the brine sludge could be recycled. Other products produced at LCP are caustic soda, hydrogen chloride and bleach. (Preliminary Report on Brine Sludge Lagoon).

In 1976, LCP investigated ways to clean the Brine Sludge Lagoon and remove mercury from the wastes that were being produced. They contracted Chem-fix of Pittsburgh to set up a temporary lab and to construct the Chem-fix Lagoon to receive non-contaminated wastes. They operated the lagoon for six days and determined that this was not a practicle means of clean-up and the lagoon was abandoned. LCP investigated the possibility of mercury recovery from the brine sludge via a roasting system in 1978. The roaster was designed and built to vaporize mercury from steam dried sludge. This would allow the solid waste to be shipped off site to a sanitary landfill. An Administrative Consent Order (ACO), issued September 1, 1981, required LCP to submit an application for a hazardous waste facility permit to operate the roaster unit. On June 30, 1982 the Bureau of Hazardous Waste Engineering denied the permit and LCP subsequently abandoned the process. Since the permit was not approved, LCP was also required to close the Brine Sludge Lagoon under the September 1, 1981 ACO.

Closure Plans for the two lagoons were submitted by February 1983 and approved on November 7, 1983. During the Closure of the lagoons, LCP closed down the production facilities in order to eliminate employee exposure to mercury. The closure of the lagoons was completed in 1984.

In June of 1984, LCP submitted a facility closure plan to NJDEP. This included the complete closure of all production areas due to economic reasons. The closure was completed in 1985. Since the closure of the production areas, LCP has operated as a storage and transfer station for methylene chloride, potassium hydroxide, sodium hydroxide and hydrochloric acid that is produced by other LCP facilities. The caustics and methylene chloride are stored in above ground tanks (five tanks, maximum volume 122,800 gallons). Hydrochloric Acid is pumped directly from tank cars to tank trucks.

Operations conducted by Union Carbide include the bottling, storing and transferring of hydrogen. They compress liquid hydrogen to hydrogen gas, bottle it and ship it to their clients. Occasionally they produce gas mixtures of hydrogen with either argon or nitrogen.

Union Carbide has had two environmental releases. One was an air release, which occurred on September 15, 1988 when a safety valve blew off a truck causing a release of hydrogen gas (60,000 cubic feet). The other was a series of oil releases that occurred over a period of several years. The soil contamination was reported by Union Carbide on October 14, 1987 to NJDEP's Division of Hazardous Waste, Metro Bureau of Enforcement. Union Carbide was issued a Notice of Violation (NOV) on December 1, 1987 for the discharge of a hazardous substance. They responded to the violation by contracting IT Corp to excavate the oil contaminated soil near their past waste oil storage area. The soil was excavated and backfilled to conform to the sites topography in May 1988.

Also in 1988, Union Carbide underwent a plant upgrading that was overseen by IT Corp. This included the dismantling of a hydrogen tank, cleaning and replacing of compressor parts and pipelines. A small amount of mercury was recovered from the area of the hydrogen tank by IT Corp.

Microcell Technologies Inc. is a pilot plant that produces small, hollow glass spheres that are used as a strengthener in steel. Microcell does not store, treat or process any hazardous substances. They have a completely closed cooling system so there is no requirement for a discharge permit. There is no evidence of environmental releases at this site.

Kuehne Chemical Company was contracted by LCP to handle the loading of LCP's products. Kuehne also manufactured sodium hypochlorite and chlorine gas. On January 8, 1981 an NJDEP inspector visited Kuehne and had noted a violation in their NPDES #NJ0027707 discharge to surface water permit. Kuehne's discharge had both high and low pH levels and elevated levels of free chlorine. On October 7, 1981 NJDEP Division of Water Resources issued an Administrative Penalty Assessment against Kuehne for \$17,500.00. Kuehne ceased operations at the site on January 27, 1981.

LOCAL DEMOGRAPHICS:

LCP is located on 26 acres of filled marshland in the city of Linden, Union County, New Jersey. The property is located in an industrial area along the Arthur Kill. The site is bordered by the Kill (to the east), GAF Corp. (to the west and north) and Linden Roselle Sewage Authority and Northville Industries Corp. (to the south). Densely populated residential areas are located approximately 1.5 miles to the west with the nearest residential home being approximately 0.5 miles west on S. Wood Avenue. The estimated populations living within a one mile and a three mile radius of the site are 7 and 62,000 people, respectively.

TOPOGRAPHY/HYDROGEOLOGY:

According to aerial photographs there are three major topographic changes at the LCP site. Originally S. Branch Creek flowed through the LCP property to the Arthur Kill. Between 1974 and 1977 the creek was dammed on both sides of the production area. This resulted in two small ponds on GAF's property. The creek presently flows from LCP's storage tanks to the Kill. The other two changes regard the Chem-fix Lagoon and the Brine Sludge Lagoon.

The Chem-fix Lagoon was constructed and operated in 1976. The Brine Sludge Lagoon was constructed by erecting earthen dikes to contain the sludge in the early 1960's. In 1984, the Chem-fix Lagoon was dewatered, excavated and back filled to conform with the site's topography and the Brine Sludge Lagoon was dewatered and capped closed. The 20 plus years of filling has caused the Brine Sludge Lagoon to be elevated approximately 40 feet above sea level.

LCP is underlain by the Brunswick Formation which consists mostly of organic clays, silt, sand, gravel and a shale bedrock. The first 10 to 15 feet below the surface of LCP is unconsolidated fill composed of silts, sands, gravel, crushed stone and brick. Beneath the fill is a dark gray organic clay layer that extends to the bedrock. Throughout the clay layer there are lenses of sand and gravel. Also between the fill and clay layers there are occasionally peat mats. The red-brown shale bedrock is encountered between 40 and 50 feet below the surface.

The groundwater in this area is not used as a potable water source due to the salt intrusion from nearby coastal waters. There are two public supply well fields within a four mile radius of LCP. One belongs to the Elizabethtown Water Company and is located approximately 3.5 miles northwest of LCP. The other well field is owned by the City of Rahway and located approximately 3.5 miles west of LCP. The wells range from 50 to 350 feet in depth and are all screened in the Brunswick Formation.

LCP monitors its groundwater under NJPDES permit (NJ0003778). The six monitoring wells currently maintained by LCP were installed along the perimeter of the Brine Sludge Lagoon in 1981. The following table lists the well numbers, total depth and screened interval.

<u>WELL NO.</u>	<u>TOTAL DEPTH (feet)</u>	<u>SCREENED INTERVAL (feet)</u>
MW1	38.50	18.00-38.50
MW1A	10.00	5.00-10.00
MW2	39.48	18.00-28.00
MW3	31.77	15.00-30.00
MW4	39.18	18.00-38.00
MW5	38.00	8.00-38.00

LCP currently monitors five of the six wells (not MW1A) to determine the impact of the Brine Sludge Lagoon on the groundwater. Past monitoring reports have indicated that groundwater quality criteria had been exceeded for iron, manganese, total organic halogens (TOX), arsenic, cadmium, chromium, lead, mercury, selenium, silver and radium. During RCRA Facility Assessment visual site inspections (VSI) conducted by NJDEP Bureau of Planning and Assessment on December 20, 1987 and April 13, 1989, the presence of volatile organic (VO) vapors were detected in headspace of Monitoring Wells 1, 2, 3, and 4. The wells are sampled quarterly for total organic carbon (TOC), TOX, phenols, dissolved metals and a few other inorganics.

LCP was required to install four new monitoring wells under their final NJPDES permit issued on October 30, 1987. LCP wished to contest the well installation and requested an adjudicator hearing on February 25, 1988. On March 28, 1988, Donald DeNoon and Karl DeVoe of LCP, Michael McEachern of Geraghty and Miller, LCP's hydrogeologic consultant, and representatives of the Division of Water Resources (DWR) met to discuss the installation of new wells and the adequacy of the present monitoring system.

The DWR had three concerns with the present monitoring system. They were:

- The well screens are not all the same length and the wells are not all the same depth.
- A release from the facility might be diluted to a concentration below the detection limits.
- A leak from the lagoon might be moving above the main groundwater system as "perched water" because of the natural glacial deposits beneath the lagoon are low in permeability (G & M proposal 5/10/88).

To address these concerns Geraghty and Miller proposed that the wells be monitored with the use of a temporary "packer" or plug that would isolate the top five feet of screen that is below the water table. The DWR agreed that the study should be conducted.

In July and August 1988 Geraghty and Miller collected groundwater samples and analyzed them for antimony, arsenic, barium, beryllium, cadmium, chromium, lead, mercury, nickel, selenium, silver, thallium and pH. The samples collected on July 27, and August 30 were conducted with the use of a temporary packer and the August 29 sampling was conducted without the use of the temporary packer. MW1 and MW1A did

not utilize a packer during the July 27 and August 30 sampling. This is because MW1A is a shallow well and MW1 was filled with sediment isolating only the top four feet of screen below the water level. The analysis indicated that MW1A exceeded the New Jersey Groundwater Quality Standard of 50 ppb, for arsenic, with levels of 73 ppb, 76 ppb, and 96 ppb. All other parameters monitored were below New Jersey Groundwater Quality Standards (NJGWQS) for all samples from all wells.

A comparison of the analytical results for wells sampled with a packer (July 27) and without a packer (August 29 & 30) revealed no significant differences, except in MW2, which exhibited an increase in barium when the packer was utilized. The concentration without the packer was 390 ppb while the concentrations with the packer were 750 ppb and 670 ppb. All concentrations were below the NJGWQS limit of 1,000 ppb. Mercury was detected only in MW1A. The concentrations for all three sampling dates were nearly identical; 0.58 ppb, 0.57 ppb, and 0.58 ppb. Again all of the concentrations were below the NJGWQS limit of 2 ppb. Also, a trace amount (8 ppb) of lead was detected in MW3 on the July 27 sampling round. Lead was not detected in any of the other wells or during either of the August sampling episodes. The lead concentration was below the NJGWQS limit of 50 ppb.

These analyses lead Geraghty and Miller to conclude that since there was no significant differences, except for barium in MW2, that there is no dilution occurring in the deep wells. Also, based on data provided by LCP, it has been determined that LCP has never used arsenic, therefore, the presence of arsenic is due to an outside source of contamination. The relatively invariant contaminant concentrations and the proximity of the well to the Arthur Kill suggest that the mercury and arsenic detected in the well represent background conditions in the Arthur Kill rather than contamination resulting from the LCP facility. (G & M January 89 Sam Report).

As of April 1989, the DWR had not yet reached a decision as to whether LCP would be required to install the additional monitoring wells. They also are considering amending the permit to include an analysis of volatile organics based on the findings of the December 22, 1987 VSI.

SURFACE WATER:

The surface waters of concern are the Arthur Kill, which borders the site on the east, and South Branch Creek, which flows through a section of the site and is a tributary to the Arthur Kill. The Arthur Kill is classified as "Saline Estuarine Waters: SE2" by the DWR and is used for recreational boating. The Peregrine Falcon, an endangered species, is known to hunt in the salt marshes near the Kill.

LCP operates a waste water treatment plant. When the plant was in full operation the waste waters from the electrolysis and sludge roaster as well as the plant's surface water run-off were treated and discharge to South Branch Creek under NJPDES permit NJ0003778. However, since the shut down of the plant's processing units, only surface run-off is treated. After treatment, the water is stored in an above ground tank. Due to the small amount of treated water, LCP discharges about two times a year.

From May 23 to May 26, 1988, Cosper Environmental Services Inc. performed a bioassay on LCP's effluent. The effluent samples collected were clear with no noticeable odor. There was a small amount of sediment present. The test organism for the bioassay was the sheeps-head minnow. There was no detection of the disease in the brood stock. For this bioassay, there was a 5.0% mortality at 100% effluent. The results were satisfactory with a LC50 of >100% effluent.

II. PERMITS:

1. NJPDES: LCP was issued a surface water discharge permit NJ0003778 on August 10, 1987, which expires April 30, 1991. The permit allows LCP to discharge treated surface run-off and spill wash-down to South Branch Creek (classified SE-3).

LCP was issued a groundwater discharge permit NJ0003778 on October 30, 1987, which expires November 29, 1992. The permit requires LCP to continue to monitor the wells surrounding the closed Brine Sludge Lagoon in order to determine the impact of the lagoon on the groundwater.

2. Air: Currently LCP has a grandfathered air pollution control permit #076565, which is for the vents on their methylene chloride storage tanks. Previously LCP had eight air permits for hydrogen chloride tanks and several chlorine process apparatus. Due to the closure of the production areas at LCP, these permits have been deleted.
3. LCP submitted their Part A RCRA application on August 13, 1980. Since the only RCRA regulated unit was certified closed in September 1985, a Part B application was considered unnecessary in lieu of a post closure permit.

III. SOLID WASTE MANAGEMENT UNITS:

Twelve solid waste management units were identified at the LCP facility. The units are: The Brine Sludge Lagoon, the Chem-fix Lagoon, the 500K Tank, the Waste Oil Drum Storage Area, Area Between Building 231 and Railroad Tracks, South Branch Creek, the Bullet Tanks, Sludge Roaster, Salt Silo 4, past GAF Waste Water Treatment Area, the cracks in Building 230 and 240, and the Effluent Treatment Building. The only RCRA regulated unit is the Brine Sludge Lagoon.

UNITS SUMMARY:

1. Brine Sludge Lagoon: The lagoon is an unlined earthen surface impoundment, which is surrounded by earth dikes that extend about seven feet higher than the facility's average ground level. The lagoon is trapezium in shape, approximately 275 feet by 200 feet by 220 feet by 80 feet. The total waste volume is estimated to be 30,900 cubic yards, which was accumulated for over 20 years before the lagoon was closed in 1984.

Under an Administrative Consent Order dated September 1, 1981, LCP agreed to submit a closure plan to the NJDEP for the lagoon. LCP submitted the plan on July 16, 1982. The plan was amended on February 28, 1983 and approved by the NJDEP on November 7, 1983. The lagoon

received the excavated waste from the Chem-fix Lagoon, which was dewatered, compressed and covered with a two foot clay cap. The cap was then covered with a foot of soil and seeded. The closure was completed in November 1984. During the closure of the lagoon, NJDEP and USEPA required LCP to suspend chlorine productions to eliminate worker exposure to mercury.

In 1981, LCP installed six monitoring wells to determine if there was any impact on the groundwater from the lagoon. These wells are sampled quarterly for TOC, TOX, phenols, dissolved metals and a few other inorganics. On several occasions between 1982 and 1987 quarterly reports indicate that concentrations of lead, chromium, cadmium, mercury, selenium and silver have exceeded the NJPDES permitted level.

Under the July 31, 1981 NJDEP Administrative Consent Order, LCP was required to implement a monitoring program to evaluate the release of mercury and other metals to the ambient environment. The program includes air, groundwater and soils obtained from land borings and creek sediments. Geraghty and Miller were retained to conduct all sampling except air. Recon Systems was contracted to perform air sampling. (Attachment B).

Recon collected two sets of sampling data on June 4, 1981. The first set of samples was collected three feet above the surface of the waste pile. Concentrations of mercury ranged from 1000 to 5000 nanogram/cubic meter (ng/m^3) to 12,600 ng/m^3 of mercury with an average concentration of 6400 ng/m^3 . Based on the mercury contamination levels, crosswind speed and the lagoons dimensions an approximately 113 g/day of mercury is emitted by the lagoon.

Groundwater samples were taken on October 6, 1981 and October 15, 1981 and analyzed by LCP's lab for dissolved mercury. All samples were below the USEPA Primary Interim Drinking Water Standard of 0.002 ppm. The water samples were also sent to Princeton Testing Labs to be analyzed for calcium, barium, iron and mercury. Again all wells had levels below 0.002 ppm for mercury. However, the levels of barium ranged from 2.0 ppm to 7.0 ppm which exceed the NJDEP Action/Cleanup Level of 1 ppm.

Soil samples were taken from the monitoring well borings for MW1, MW2, MW3, MW4, MW5. The samples were analyzed by LCP for desorbable mercury with samples taken every 6 inches from the surface to the total depth of each well. Levels of mercury ranged from 0.26 ppm to 772 ppm, with the concentrations decreasing with depth. Surface soil samples were also taken near the sludge roaster and across Avenue B near the railroad tracks. The samples were analyzed in the same manner as the previous samples and had recorded levels of mercury ranging from 27.45 ppm to 1,580 ppm. Also, one creek-bed sediment sample was taken and analyzed by LCP for mercury. The sample contained 46.42 ppm of mercury. All of the surface samples exceeded the NJDEP Action/Cleanup Level of 1 ppm for mercury.

On April 13, 1989 the Bureau of Planning and Assessment (BPA) conducted a RCRA Visual Site Inspection (VSI) of the LCP facility. The closed lagoon appeared secure. During the investigation of the

monitoring wells, volatile organics were detected in the headspace of the wells by both the OVA and Hnu meter with readings ranging from 2 ppm to 350 ppm. Also, on a previous VSI conducted by the BPA on December 22, 1987, organic vapors were detected in MW1 and MW2 with the Hnu meter. Due to the presence of organic vapors in the headspace of the wells, it is recommended that the NJPDES 30 year post closure monitoring program be expanded to include an initial scan for priority pollutants and volatile organics. Due to the presence of mercury contamination, a RFI is recommended for this unit to determine the extent of the contamination. The RFI should consist of soil sampling around the perimeter of the lagoon to determine if any hazardous materials have leached from the lagoon. The sample analysis should include, but not be limited to, total mercury, total barium, volatile organics and priority pollutants. If this sampling indicates significant levels of contamination exist, a more detailed RFI is recommended.

2. The Chem-fix Lagoon: The Chem-fix Lagoon was an earthen surface impoundment which was in operation for a few months in 1976. The lagoon dikes were constructed to a height of eight feet with an earthen core and crushed stone cover. Two 0.20 mil thick visquene plastic liners were installed in the lagoon which was also equipped with a perforated under drain system for leachate collection. Any leachate collected was pumped to the effluent treatment plant. The lagoon received approximately 460 cubic yards of treated brine sludge.

The Chem-fix Lagoon was closed in 1983. The contents of lagoon were excavated and placed into the Brine Sludge Lagoon. It was then back filled, graded and seeded. The proximity of the Chem-fix Lagoon to the Brine Sludge Lagoon allows the NJPDES permitted wells to monitor any leachate releases to the groundwater from either lagoon. During the VSI on April 13, 1989, the lagoon appeared secure and there is no evidence of releases. Due to the proximity of this lagoon to the Brine Sludge Lagoon and the potential to have received mercury waste; a limited RFI is recommended. The RFI should consist of soil sampling to determine if hazardous wastes have leached from the lagoon. The sample analysis should be identical to the analysis of the Brine Sludge Lagoon.

3. The Waste Oil Drum Storage Area: The Container Storage Area is a 300 square foot concrete pad, one foot thick, with a six inch curb. During full plant operations up to 40 (55 gallon) drums of waste lubricating oils, transformer oils, degreasing solvents, and dewatered brine sludges could be stored there. These wastes were shipped off-site for proper disposal within 90 days.

During the December 22, 1987 VSI, there were no drummed waste being stored, however the pad was covered with an absorbant material and oily residues were noted on the gravel in the surrounding area. During the April 13, 1989 VSI, stained soils were also noted. Using air monitoring equipment (Hnu and OVA), organic vapors were detected in the soil (10 ppm on the OVA and 6 ppm on the Hnu). It is recommended that a RFI be conducted on this unit to determine the extent of the release. The RFI should consist of soil sampling and the analysis should include, but not be limited to, petroleum hydrocarbons, volatile organics, total mercury and priority

pollutants. Based on the results of the soil sampling it may be required that the groundwater be monitored.

4. Area Between Building 231 and Railroad Track: In August 1980, NJDEP was contacted by a LCP employee. The employee stated that one day in 1973 or 1974, LCP used a steam shovel to take some of the brine sludge from the lagoon and spread it on the ground behind the compressor building (#231). In 1981, during the Geraghty and Miller sampling episode, two surface soil samples (S-3, S-4) were taken near this area. The samples were analyzed for desorbed mercury. The results were: S-3, 1070 ppm and S-4, 1580 ppm of mercury. These levels of mercury are the highest detected in any sampling conducted on the LCP site. These concentrations are 300 ppm greater than the soil samples near the Brine Sludge Lagoon. Due to the presence of mercury contamination, a RFI is recommended for this unit to determine the extent of the contamination. The RFI should consist of soil sampling which includes, but not be limited to, total mercury and priority pollutants. If the results of the soil sampling indicate significant contamination, further investigation will be necessary to determine the extent.
5. 500K Tank and Surrounding Areas: The 500,000 gallon tank is located between Avenue C and Avenue B. The tank has served two purposes. Originally the tank was used to store sodium hydroxide and later became incorporated with the effluent treatment system and was used as a storage tank for wastewater. Presently the tank is not used. The area surrounding the tank was paved in 1982.

From 1980 to 1982, a series of NJDEP Hazardous Waste Enforcement inspections revealed several releases in the area of the 500K Tank. The releases in this area are:

- | | |
|----------|--|
| 9/17/80 | Brine Sludge was observed on the gravel near the 500K "collection tank." |
| 1/21/81 | During the inspection a liquid was observed spewing from a cracked PVC pipe near the 500K Tank and pump pit. |
| 10/22/81 | A brine sludge slurry release from a transfer line was evidenced by a 1 by 15 foot spill area located on Avenue B between the pump pit and the Brine Sludge Lagoon. There was also a hydrochloric acid spill approximately 15 feet northwest of the 500K Tank. |
| 4/13/82 | Sodium sulfide crystals were evident on the gravel surface in the pump pit area. |

Due to documented releases, a limited RFI is recommended for this unit. The RFI should consist of soil sampling and the analysis should include, but not be limited to, total mercury, hydrochloric acid, sodium hydroxide, sodium sulfide, and priority pollutants. A more in-depth RFA may be required based on the results of the soil sampling.

6. South Branch Creek: South Branch Creek is a tidal arm of the Arthur Kill that flows along the eastern border of the LCP property. Since

1974, LCP has had three discharges to the creek. On or about October 30, 1972 and February 7, 1974, there was an overflow of supernatant in contact with brine muds from LCP's Brine Sludge Lagoon into South Branch Creek. LCP pled guilty to violation 3 USC 1311 (a) for both occurrences on September 25, 1975. A fine of \$5,000 was levied for each occurrence. The third incident occurred on August 15, 1979. Due to a sodium chloride block in LCP's east saturator an excess of mercury tainted brine overflowed the saturator. The surge of flow exceeded the surge capacity of the wastewater system. This caused an estimate of 10,000 to 20,000 gallons of brine to flow into South Branch Creek. LCP notified NJDEP and the EPA samples taken by the Coast Guard revealed the mercury contamination of the spill was 8.6 ppm.

In 1981, a sediment sample was taken from the creek. The sample was analyzed by LCP's Labs for mercury. The mercury concentration was 46 ppm, which exceeds NJDEP action/clean-up level of 1 ppm. Due to past releases to the South Branch Creek a limited RFI is recommended for this unit. The RFI should consist of sediment sampling and surface water sampling both upstream and downstream of LCP's discharge (DSN 001). The sample analysis should include, but not be limited to, total mercury, barium and priority pollutants.

7. **Bullet Tanks:** These tanks have been abandoned since about 1983. The Bullet Tanks were used to store brine sludge. A series of NJDEP Hazardous Waste Enforcement inspections have revealed that there were continual problems with brine containment in the area under the tanks. From September 17, 1980 until April 13, 1982 the inspections stated that the containment area had brine residues. On October 9, 1980 and January 22, 1981 the area was full with the potential to overflow.

Due to the potential for a release to exposed soils a limited RFI is recommended for this unit. The RFI should consist of soil samples around the bermed area of the abandoned Bullet Tanks. The sample analysis should include, but not be limited to, total mercury, acid-base extractables and priority pollutants. Based on the results of the soil sampling it may be required that an additional investigation be conducted.

8. **The Sludge Roaster:** The Sludge Roaster was constructed in 1978 to vaporize mercury from steam dried brine sludge. The roaster was built on a 16 x 40 foot concrete pad, one foot thick, with drain channels, that connect to the effluent treatment plant, and a cinder block curb around the pad.

Under an Administrative Order issued on September 1, 1981, LCP was required to submit an application for a Hazardous Waste Facility permit to operate the roaster unit. The permit was denied on June 30, 1982 by the Bureau of Hazardous Waste Engineering (BHWE) and LCP subsequently abandoned the process.

An enforcement inspection by the Division of Environmental Quality, Air Pollution Control Program on November 5, 1981 disclosed a hole in a muffler plate on the sludge roaster. This allowed an excessive quantity of mercury vapors to be released to the atmosphere.

In 1985, the sludge roaster was dismantled and most of its components were shipped to other LCP facilities. No further action is necessary for the roaster unit, at this time.

9. Salt Silo 4: This silo was used to store the brine sludge prior to disposal in the lagoon. During the October 9, 1980 inspection brine sludge was observed on the ground around the silo. The silos were removed in 1985. A limited RFI is recommended on this unit due to the potential of releases to the soil. Soil sampling should be conducted and the analysis should include, but not be limited to, total mercury and priority pollutants. An additional investigation may be required based on the soil results.
10. The Effluent Building : This building was originally used as a brine filtering facility. LCP began wastewater treatment in this building around the time of the lagoon closures. The October 9, 1980 inspection indicates that there was brine caked on the floor near the filters. This was washed to the sump next to the 500K Tank and eventually treated. Because there are no documents of a hazardous release from this area, no further investigations are warranted at this time.
11. Past GAF Waste Water Treatment Area: From past GAF and LCP site maps it appears that the waste water treatment plant that was operated by GAF was located on the western side of building 220. It is believed that the plant was used primarily for pH neutralization from the 1950's to the early 1970's. The site presently is paved over and supporting a transformer substation. No further investigation is warranted at this time.
12. Cracks in the Floor of Building 230 and 240: The employee complaint also stated that because of Occupational Safety and Health Administrative visits LCP re-cemented the floors of Buildings 230 and 240 to cover cracks. According to the employee these cracks may have exposed soils that could have been contaminated with mercury. The employee felt that this was not investigated by LCP.

In 1976, OSHA inspected the buildings and did report openings in the floor and wall of these rooms. However, there was no indication of possible soil contamination with mercury.

OSHA also conducted a health survey in April 1985. This survey concluded that any workers in Buildings 230 and 240 are exposed to mercury and mercury vapors above the OSHA 8 hr-time weighted average permissible exposure limit. According to the Plant Manager, John Canonton, LCP still monitors for mercury vapors and worker exposure even though they no longer produce chlorine.

Due to the potential of soil exposure to mercury, a limited RFI is recommended for this unit. Soil sampling should be conducted and the analyses should include, but not be limited to, total mercury and priority pollutants.

ADDITIONAL CONCERN:

The 1982 Waste Lagoon-Ground Water Monitoring Report submitted by Geraghty and Miller stated that a possible source for the mercury

contamination at LCP was due to contaminated fill. There are three conditions which suggest that this is not the case. The data presented in the report indicate that soil samples below the fill layer have levels of mercury exceeding 1 ppm, the NJDEP action level. Based on the history of the site, the soils at GAF and LCP should have a similar composition. However, soil sampling conducted at GAF by NJDEP Bureau of Planning and Assessment, in December 1988 (data not reviewed for QA/QC), indicated lower mercury levels than LCP. GAF had levels of mercury ranging from <0.1 ppm to 347.8 ppm (Ave 29.1 ppm) and the levels of mercury for LCP ranged from <0.1 ppm to 1,580 ppm (Ave 102.4 ppm). The highest levels of mercury 1,070 ppm and 1,580 ppm are in the area of alleged surface dumping, it is likely that this is a probable cause of mercury contamination. It is suggested that if the recommended soil sampling yields mercury levels similar to those of 1982, LCP should submit a remedial plan to address the contaminated soil.

ATTACHMENT #1
PAST OPERATIONS

ATTACHMENT #1

Item 1B: Past Operations

Prior to UCC-Linde Divisions operations, the property was vacant and owned by GAF. GAF leased the property to Linden Chemical and Plastics (LCP) Inc. who in turn subleased the property to UCC-Linde. In December 1971, LCP purchased the property from GAF. Union Carbide Corporation, Linde Division, operated the Linden facility as a hydrogen transfill and repackaging plant from 1957 to 1989. In January 1989, Union Carbide transferred the assets of this industrial gases operation to a wholly-owned subsidiary, Linde Gases of the Mid-Atlantic, the operation did not change and continued to date.

There are currently 3 - 4 employees at the facility. Operations conducted are as follows:

Hydrogen gas, generated by LCP was delivered to the Linde Plant via pipeline. It was a well known fact that due to the process at LCP, the hydrogen would be contaminated with mercury. The hydrogen was purified prior to containerization by Linde.

LCP stopped supplying pipeline hydrogen in late 1980. Liquid cryogenic hydrogen was then delivered by trailer to the Linde facility and stored in an aboveground 18,000-gallon storage tank. The liquid hydrogen was vaporized to its gaseous form and pumped by compressor through the purification system into DOT approved cylinders and high pressure tube trailers for delivery to customers. Hydrogen product, in cylinders and tube trailers, were then analyzed for conformance with customer or sales specifications. Mixtures of hydrogen and nitrogen or hydrogen and argon were also made upon customer request. In July, 1988, the purification system was removed and the hydrogen was pumped by either compressor or high pressure pump.

Cylinder maintenance activities include: hydrostatic pressure testing of cylinders in compliance with DOT cylinder specifications; valve removal, replacement and repair; and routine brush or roller painting of cylinders as needed.

Routine plant maintenance activities include: periodic dismantlement and

reassembly of the compressor to repair or replace broken or worn parts, changing lubricating oil on the compressor and vacuum pumps, and welding, cutting and brazing of filling manifolds and equipment.



State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER RESOURCES
CN 029
TRENTON, NEW JERSEY 08625

GEORGE G. McCANN, P.E.
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M E M O R A N D U M

To: Brian Crisafulli
Bureau of Compliance and Technical Services
Division of Hazardous Waste Management

Through: Tracy Wagner, Supervisor; Kenneth Siet, Chief
Bureau of Ground Water Pollution Abatement
Division of Water Resources

From: Jill Monroe, Geologist
Bureau of Ground Water Pollution Abatement
Division of Water Resources

Subject: CME for LCP Chemicals and Plastics, Inc.
Linden, New Jersey

Background and Facility Information:

LCP Chemicals and Plastics, Inc. (LCP) is located on Tremley Point in Union County, New Jersey. LCP owns the 26 acre site which contains a chemical manufacturing facility which produced liquid chlorine. The Tremley Point area has been developed for industry, with manufacturers and tank farms located in the immediate area of LCP. The Point extends to the Arthur Kill, a tidal waterway used for recreational purposes and a wildlife habitat.

LCP operated a liquid chlorine manufacturing process at the facility between 1972 and 1985. Prior to LCP ownership, GAF owned the facility and also manufactured liquid chlorine. The process used by both GAF and LCP was the "mercury cell process" which yielded a chlorine gas through the electrolysis of a sodium chloride (brine) solution in the presence of metallic mercury. Other products included sodium hydroxide and hydrogen gas.

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LCP employed a brine purification process to recover and recycle metallic mercury. The process was incomplete and a waste product of mercury contaminated brine sludge resulted. An unlined surface impoundment was used in the brine purification process, as well as being the deposition site for the mercury contaminated brine sludge. Between GAF and LCP, the unlined surface impoundment was used for approximately 20 years, between 1962 and 1982. In 1982, LCP removed the unit from operation.

The unlined surface impoundment was constructed above grade, according to the available records, by the construction of berms. It rested on fill placed on the site in the 1950's over the native tidal wetland sediments. The surface impoundment is located on the eastern edge of the site, adjacent to a tidal creek named South Branch Creek, and the neighboring tank farm of Northville Industries. South Branch Creek flows immediately adjacent to the surface impoundment and into the Arthur Kill located approximately 1100 feet to the east of the surface impoundment.

The mercury contaminated brine sludge (200-500 ppm of mercury) was closed in place in the unlined surface impoundment when the unit was closed. An estimated waste volume of 30,900 cubic yards currently remains in the unit. Closure involved drying the sludge, regrading, and the placement of a clay cap over the unit, followed by the placement of topsoil and the establishment of a vegetative cover in accordance with the November 7, 1983 closure/post closure approval issued by the Bureau of Hazardous Waste Engineering, Division of Waste Management. The closure/post closure plans were submitted in accordance with an Administrative Consent Order signed by LCP and the Department on September 16, 1981.

The facility had been required to monitor existing ground water monitor wells and to maintain the cover soil and cover vegetation on the closed in place surface impoundment under a NJPDES-DGW permit (NJ0003778). This permit was recently reissued on October 30, 1987. Conditions in the final permit related to the installation of new ground water monitor wells are being contested by LCP. The Department is currently discussing with LCP a means to settle the differences.

A possible means to settle the contested permit conditions related to the installation of new ground water monitor wells involves an "interim" ground water monitoring program. LCP recently submitted a proposal to monitor the single shallow monitor well, MW 1-A, and the top five (5) feet of ground water in all of the other monitor wells, MW's 1, 2, 3, 4 and 5, by using a well packer. This proposal, submitted under cover of letter dated May 5, 1988 by Geraghty and Miller, was approved with minor changes by the Department on May 24, 1988. The proposal should

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lend additional insight on water quality in the fill/native soil interface. Further, by isolating the top five (5) feet of ground water in each well, information will be obtained on the quality of the water closest to the base of the closed in place surface impoundment at each monitor well site. This should clarify some questions related to the adequacy of the existing ground water monitoring system.

Geology/Geohydrology and Ground Water Monitoring:

The LCP facility is located on heterogeneous fill material. The area was originally a tidal wetland area influenced by the nearby Arthur Kill. The fill is composed of sand, gravel, brick and slag and is approximately 10 - 15 feet thick across most of the site but being shallower, approximately 5 feet in thickness, near South Branch Creek. The fill was placed over tidally deposited sands, silts, clays and peats. Beneath the tidal sediments are glacial till deposits overlying the Brunswick formation. A sandy "channel" appears to exist beneath the surface impoundment which may have been a tidal stream bed at one time. Bedrock is located approximately 40 feet below grade.

The site is hydrogeologically complicated due to the variability in the tidal and glacial deposits and the fill materials, and due to the proximity of the tidal waterways which influence ground water quality and water levels in the wells. Further, adjacent industrial land use may be impacting ground water quality as well as recharge/discharge characteristics and ground water contours.

LCP installed a detection ground water monitoring system in 1981 in accordance with the above referenced Administrative Consent Order. Five (5) monitor wells were installed along the edge of the surface impoundment, between the surface impoundment and South Branch Creek. One (1) well was installed in what was considered an upgradient location inland from the tidal creek but still adjacent to the surface impoundment. Monitoring of these wells during closure and post closure was required in the November 7, 1983 approval granted by the Bureau of Hazardous Waste Engineering, and the NJPDES-DGW permit issued by the Division of Water Resources on December 23, 1983 specified the monitoring of five (5) of the six (6) existing wells. MW 1-A was not required to be monitored under the December 23, 1983 NJPDES-DGW permit.

The monitor well boring logs (attached to this checklist) and LCP's consultant indicate that 1 1/2 inch diameter monitor wells were installed and screened in what was determined to be the most permeable lithologies. The screen length was chosen to obtain an "adequate" sample, given the slow permeability of the sediments. The screen location was chosen to detect a vertical migrating release from the surface impoundment through the fill, the tidal

ATTACHMENT 11

sediments and the glacial till. Only one monitor well screen was set at a shallow enough depth to sample ground water at the fill/native soil interface which could also establish the existence of a vertical gradient since it was installed adjacent to a deeper monitor well.

The most recent ground water quality data (January, 1988) indicates that ground water quality criteria for iron and manganese have been exceeded, and that TOX levels in all of the wells adjacent to the South Branch Creek are greater than 1000 ppb. Between 1982 and 1987, ground water monitoring results have been exceeded for arsenic selenium, silver, lead, chromium, cadmium, mercury and radium. The RCRA-RFA investigation also revealed the presence of organic vapors in the head space of existing monitor wells 1 and 2 which may correlate with elevated levels of Total Organic Halogen results in the ground water sample analyses.

Conclusions and Recommendations:

The Department's review of the ground water monitor well locations and construction specifications, consultant reports and data reveal the following concerns:

1. There are currently no consistent ground water quality results from the "shallow" monitor well, labeled 1-A, which monitors the ground water in the zone of the fill/native soil interface.

The implication of this is that a possible route for contaminant release is not monitored. The February, 1982 report prepared by LCP's consultant, Geraghty and Miller, indicated that the base of the fill appeared saturated. The unlined surface impoundment was constructed over heterogeneous fill, presumably more permeable than the native underlying sediments. If leachate was being generated from the surface impoundment, or if through vertical movement of the water table contaminants are being solubilized from the waste materials closed in the surface impoundment, this water could be moving horizontally above the less permeable sediments of the tidal deposits and glacial till in the direction of decreasing hydraulic head. The discharge point for shallow ground water is assumed to be South Branch Creek.

2. The horizontal and vertical gradients and flow paths, and the degree of hydraulic connection between the fill, the tidal sediments and the glacial till, are site characteristics which have not been adequately defined.

The implication of this is that a vertical flow gradient cannot be determined. Without a determination on whether the ground water beneath the unit behaves as one system, or if some ground

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water exists under semi-confined or confined conditions, the water levels in the existing ground water monitoring wells are useless in determining the horizontal direction of ground water flow necessary to identify upgradient and downgradient monitoring locations. The need for this information may be represented by the apparent shifts in upgradient and downgradient monitoring points

3. The existing, deeper, wells screen a large segment of the underlying sediments.


The implication of this is that ground water contaminants may be diluted with ground water that is not contaminated. Further, the monitoring system should be sampling the water in the uppermost aquifer, or portion of the uppermost aquifer, which appears to be the saturated zone at the fill/native soil interface.

4. Statistical comparison of upgradient and downgradient wells screened at different depths, finished with different screen lengths, and constructed through different techniques, etc. may not be valid. As such, the RCRA and the NJPDES regulations may not be able to be complied with.

LCP has not met the statistical requirements for RCRA or NJPDES. Their argument is based on the tidal influence on the indicator parameters required to be analyzed, i.e. sulfate, total dissolved solids, etc. LCP has not proposed specific alternate parameters to be analyzed which would more adequately reflect a release from the surface impoundment, but the question remains on whether a positive or negative result to the test would be meaningful given the current monitoring system design.

In closing, LCP has successfully argued in the past that the existing wells are screened in the sediments most likely to detect a release, although the screens of most wells are separated from the base of the surface impoundment by tidal muds and glacial till which have restrictive permeabilities and have low transmissivity. The Department's main belief is that the avenue of release which is not being monitored is the fill/native soil interface. Although the surface impoundment wastes are intended to prevent infiltration from generating leachate, any shallow ground water migrating horizontally beneath the surface impoundment and above the tighter native sediments could flush contaminants from the soil and into the South Branch Creek. This shallow, horizontal migration route, which may be seasonal, should not be neglected in the ground water monitoring program.

Another point which must be considered is that although the existing ground water monitoring system does not appear to strictly meet the letter of the regulations, the existing ground water monitoring data indicates periodic elevations in specific

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metals and Total Organic Halogen. These results should be further investigated, in addition to the work needed to define the geologic parameters influencing ground water movement and the surface features which may also influence ground water movement and quality. The "interim" ground water monitoring program, described above, should provide some valuable information needed to evaluate the ability of the existing monitor wells to detect a release from the closed in place surface impoundment.

ATTACHMENT 4

RESULTS OF THE JULY/AUGUST
1988 GROUND-WATER SAMPLING PROGRAM,
LCP CHEMICALS-NEW JERSEY
LINDEN, NEW JERSEY

January 1989

Geraghty & Miller, Inc.
Ground-Water Services
125 East Bethpage Road
Plainview, New York 11803

ATTACHMENT F

RESULTS OF THE JULY/AUGUST
1988 GROUND-WATER SAMPLING PROGRAM,
LCP CHEMICALS-NEW JERSEY
LINDEN, NEW JERSEY

INTRODUCTION

In July and August 1988, Geraghty & Miller, Inc. personnel collected ground-water samples from an existing monitoring well network at LCP Chemicals-New Jersey (LCP), Linden, New Jersey (Figure 1). The sampling was performed under special sampling conditions in accordance with the "Technical Proposal for Monitoring Well Sampling and Evaluation for NJPDES Compliance," dated May 5, 1988.

As described in the sampling plan, the purpose of the sampling program was to verify the adequacy of the existing monitoring well network to monitor any contaminants migrating from the closed brine lagoons. The protocols specified in the plan required that samples be collected from all monitoring wells with the entire screen length open to the formation. The wells were also to be sampled after the upper 5 ft of each well screen, below the water table, were isolated by use of a temporary "packer" or plug. Water passing through the well screen above the packer provides a sample representative of the isolated zone of interest. A description of the packer installation technique is provided in Appendix A. The constituents for which the wells were sampled are as follows: antimony, arsenic, barium,

GERAGHTY & MILLER, INC.

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beryllium, cadmium, lead, mercury, nickel, selenium, silver,²
hexavalent chromium, thallium, and pH.

Laboratory analyses were performed by Environmental Testing and Certification (ETC), Edison, New Jersey, according to the U.S. Environmental Protection Agency (USEPA) Contract Laboratory Program (CLP) Protocols. The Geraghty & Miller ground-water sampling protocols used for the special sampling program are provided in Appendix A and laboratory analysis reports in Appendix B. This report provides a summary of the special sampling program and its results.

METHODOLOGY

July 27, 1988 Sampling Round

On July 27, 1988, samples were collected from Monitoring Wells MW-1 through MW-5. Prior to evacuation of the wells, static water level and well depth measurements were collected. The depth to water and calculated mean sea level water-level elevations are shown in Table 1. The configuration of the shallow water table, based on the July 27 measurements, is presented on Figure 2.

Measurement of the depth of Well MW-1 indicated that silt had collected in the well to a depth of 22.5 ft below land surface. The open screen length available was limited

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to the top 4 ft of the well screen. The installation of the packer system for Well MW-1 was, therefore, not applicable. The packer assembly was also not used during sample collection from Well MW-1A since this well was constructed with a 5 ft screen. Wells MW-1 and MW-1A were evacuated with a centrifugal pump and sampled with a peristaltic pump.

Field analyses of pH, specific conductance, and temperature are provided in Table 2. The packer system was installed on Wells MW-2, MW-3, MW-4, and MW-5, as described in Appendix A. A replicate sample was collected at Well MW-5 and labeled MW-6. A summary of the analytical results from the July 27, 1988 sampling round is provided in Table 3.

August 29, 1988 Sampling Round

Samples were collected from all wells in accordance with New Jersey Pollutant Discharge Elimination System (NJPDDES) permit requirements and use of CLP protocols, (i.e., without the use of the temporary packer). Depth-to-water measurements and calculated mean sea level water-level elevations are provided in Table 1. The configuration of the shallow water table, based on these measurements, is presented on Figure 3. Field parameter analyses are provided in Table 4.

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As in the July sampling, a replicate sample was collected at Well MW-5 and labeled MW-6. A summary of the laboratory results for the samples collected August 29, 1988 is provided in Table 5.

August 30, 1988 Sampling Round

Samples were collected August 30, 1988 from Wells MW-1A through MW-5. The packer was installed in Wells MW-2 through MW-5. Well MW-1 was not sampled. Depth-to-water measurements and calculated mean sea level water-level elevations are provided in Table 1, and field parameter analyses are provided in Table 6. The water-table configuration, based on measurements made August 30, 1988, is shown on Figure 4.

The replicate sample was collected at Well MW-4 and labeled MW-6. A summary of the analytical results from the August 30, 1988 sampling round is provided in Table 7.

WATER QUALITY

All sample results were below New Jersey Ground-Water Quality Standards for the constituents analyzed, except for Well MW-1A. Slightly elevated levels of arsenic were detected in all three sampling rounds from this well (a maximum of 96 micrograms per liter [ug/L] versus the New

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Jersey standard of 50 ug/L). The well had a 5-ft screen section so no packer/non-packer comparison was possible.

As with Well MW-1A, Well MW-1 was sampled without the use of the packer since it is silted in and has only 4 ft of screen open for sampling. A comparison of analytical results from the July 27 and August 29 Well MW-1 samples detected only insignificant concentration differences.

A comparison of analytical results for wells sampled with packer (July 27) and resampling without packers, (August 29 and 30) reveals no significant differences, except in Well MW-2, which exhibited a slight increase in detected barium after installation of packer. The concentration detected without a packer (August 29) was 390 ug/L. Concentrations detected with packers July 27 and August 30 were 750 ug/L and 670 ug/L (respectively). All concentrations detected were below the New Jersey Ground-Water Quality Standards (1,000 ug/L).

Laboratory results for mercury were nearly identical for all three sampling rounds. Mercury was not detected in any well other than Well MW-1A. The results for mercury analyses of Well MW-1A samples were as follows: 0.58 ug/L (July 27), 0.57 ug/L (August 29), 0.59 ug/L (August 30). All results were below New Jersey Ground-Water Quality Standards (2 ug/L).

A trace amount of lead (8 ug/L) was detected in Well MW-3 with the packer installed on the July 27 sample round. However, lead was not detected with the packer installed on the August 30 sample, nor without the packer on the August 29 sample. The detected value of July 27 (8 ug/L) was below the New Jersey Ground-Water Quality Standard (50 ug/L).

Ground-Water Flow

Review of the water-table contour maps (Figures 2, 3, and 4) indicates that the general direction of the horizontal component of ground-water flow was from the lagoon towards South Branch Creek during the July 27, 1988 sampling round. The direction of ground-water flow was reversed during the August 29 and 30, 1988 sampling rounds. The observed directional changes in ground-water flow reflect tidal variations.

CONCLUSIONS

1. No substantive differences were observed between the packed and unpacked sampling events.
2. Well MW-1A, which has a 5-ft screen, was the only well with any detected mercury concentrations.
3. During both the July and August sampling rounds, mercury and arsenic were detected in monitoring well

7

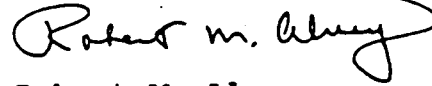
MW-1A. The contaminant concentrations did not vary much between the two rounds or whether the samples were collected during a rising or falling tide. Based on data provided by LCP, it has been determined that arsenic was never used at the Linden facility, therefore, the presence of arsenic is indicative of an outside source of contamination. The relatively invariant contaminant concentrations and the proximity of the well to the Arthur Kill suggest that the mercury and arsenic detected in the well represent background conditions in the Arthur Kill rather than contamination resulting from the LCP facility. The current monitoring well network can therefore be used to monitor any impacts from the former lagoons and the construction of additional wells is unnecessary.

RECOMMENDATIONS

Well MW-1 should be redeveloped to remove silt and ensure that the entire screen length is open to the formation for future sampling.

Respectfully submitted,

GERAGHTY & MILLER, INC.



Robert M. Alvey
Principal Scientist/
Project Manager



Gregory Shkuda
Associate/
Project Officer

RMA/GS:jb
January 4, 1989

GERAGHTY & MILLER, INC.

ATTACHMENT 

Table 1. Depth to Water and Water-Level Elevations of Monitoring Wells, LCP Chemicals-New Jersey, Linden, New Jersey.

Monitoring Well Designation	Measuring Point Elevation ^a	Date Measured: 7/27/88		8/29/88		8/30/88	
		Depth to Water ^b	Water-Level Elevation ^a	Depth to Water ^b	Water-Level Elevation ^a	Depth to Water ^b	Water-Level Elevation ^a
MW-1	8.65	3.95	4.70	3.58	5.07	4.36	4.29
MW-1A	10.32	5.09	5.23	4.44	5.88	5.53	4.79
MW-2	7.66	3.14	4.52	2.68	4.98	3.64	4.02
MW-3	13.39	7.98	5.41	7.66	5.73	8.09	5.30
MW-4	11.28	5.66	5.62	5.59	5.69	5.86	5.42
MW-5	11.57	5.73	5.84	6.99	4.58	7.50	4.07

^a Ft above mean sea level.
^b Ft below measuring point.

Table 2. Summary of Field Parameters Measured for Ground-Water Samples Collected July 27, 1988, LCP Chemicals-New Jersey, Linden, New Jersey.

Well	pH (standard units)	Specific Conductance (umhos/cm at 25°C)	Temperature (°C)	Remarks
MW-1	6.70	11,400	17	Red/brown, very turbid
MW-1A	6.95	7,000	22	Colorless, clear
MW-2	6.85	11,000	18	Red/brown, very turbid
MW-3	7.15	12,000	18	Pale green, clear
MW-4	6.95	12,000	20	Lt. brown, cloudy
MW-5	7.05	1,400	20	Pink, cloudy

Table 3. Summary of Analytical Results for Metals in Ground-Water Samples Collected July 27, 1988, LCP Chemicals-New Jersey, Linden, New Jersey.

Parameter (ug/L)	New Jersey Ground-Water Quality Standards (ug/L)	Sample Designation:						-----Replicates-----a		Field
		MW-1	MW-1A	MW-2	MW-3	MW-4	MW-5	MW-6	Blank	
Antimony	NS	--	--	--	--	--	--	--	--	
Arsenic	50	--	73	BMDL	BMDL	BMDL	BMDL	BMDL	BMDL	
Barium	1000	290	BMDL	750	330	90	140	140	--	
Beryllium	NS	--	--	--	--	--	--	--	--	
Cadmium	10	--	BMDL	--	--	--	--	--	--	
Chromium (Hex)	50	<10	<10	<10	<10	<10	<10	<10	<10	
Lead	50	--	--	BMDL	8	--	--	--	--	
Mercury	2	--	0.58	--	--	--	--	--	--	
Nickel	NS	--	--	--	BMDL	BMDL	--	--	--	
Selenium	NS	BMDL	--	--	--	--	--	--	--	
Silver	50	BMDL	--	BMDL	--	--	--	BMDL	--	
Thallium	NS	--	--	--	--	--	--	--	--	

Laboratory Analysis by Environmental Testing and Certification.

ug/L Micrograms per liter.

NS No standard has been established.

-- Not detected.

BMDL Below method detection limit. (Refer to Appendix B)

^a Replicate samples from Well MW-5.

GERAGHTY & MILLER, INC.

ATTACHMENT

FIGURES

Table 4. Summary of Field Parameters Measured for Ground-Water Samples Collected August 29, 1988, LCP Chemicals- New Jersey, Linden, New Jersey,

Well	pH (standard units)	Specific Conductance (umhos/cm at 25°C)	Temperature (°C)	Remarks
MW-1	6.60	>20,000	18	Red/brown, very turbid
	6.65	>20,000		
	6.70	>20,000		
	6.70	>20,000		
MW-1A	6.90	14,500	21	Colorless, clear
	7.00	14,000		
	7.00	13,500		
	7.00	13,500		
MW-2	6.70	20,000	18	Red/brown, very turbid
	6.75	20,000		
	6.75	20,000		
	6.75	20,000		
MW-3	7.05	>20,000	18	Colorless, clear
	7.05	>20,000		
	7.05	>20,000		
	7.05	>20,000		
MW-4	7.15	>20,000	19	Brown/black, slightly turbid
	7.15	>20,000		
	7.15	>20,000		
	7.15	>20,000		
MW-5	6.95	5,000	18	Red/brown, turbid
	6.95	5,000		
	6.95	5,000		
	6.95	5,000		

Table 5. Summary of Analytical Results for Metals in Ground-Water Samples Collected August 29, 1988, LCP Chemicals-New Jersey, Linden, New Jersey.

Parameter (ug/L)	New Jersey Ground-Water Quality Standards (ug/L)	Sample Designation:						-----Replicates-----a		Field Blank
		MW-1	MW-1A	MW-2	MW-3	MW-4	MW-5	MW-6		
Antimony	NS	--	BMDL	--	--	--	--	--	--	
Arsenic	50	--	76	BMDL	BMDL	13	BMDL	BMDL	--	
Barium	1000	350	30	390	350	98	190	190	--	
Beryllium	NS	--	--	--	--	--	--	--	--	
Cadmium	10	--	BMDL	--	--	BMDL	--	--	--	
Chromium (Hex)	50	<10	<10	<10	<10	<10	<10	<10	<10	
Copper	1000	BMDL	BMDL	--	BMDL	BMDL	--	BMDL	--	
Lead	50	--	--	--	BMDL	BMDL	BMDL	BMDL	--	
Mercury	2	--	0.57	--	--	--	--	--	--	
Nickel	NS	--	--	--	--	--	--	BMDL	--	
Selenium	NS	BMDL	--	--	--	--	--	--	--	
Silver	50	BMDL	--	--	--	BMDL	--	--	--	
Thallium	NS	--	--	--	--	--	--	--	--	

Laboratory Analysis by Environmental Testing and Certification.

ug/L Micrograms per liter.

NS No standard has been established.

-- Not detected.

BMDL Below method detection limit. (Refer to Appendix B)

a Replicate samples from Well MW-5.

GERAGHTY & MILLER, INC.

ATTACHMENT

Table 6. Summary of Field Parameters Measured for Ground ~~Water~~
 Samples Collected August 30, 1988, LCP Chemicals -
 New Jersey, Linden, New Jersey.

Well	pH (standard units)	Specific Conductance (umhos/cm at 25°C)	Temperature (°C)	Remarks
MW-1A	6.75	11,500	20	Colorless, clear
MW-2	6.85	17,000	17	Red/brown, very turbid
MW-3	7.10	17,500	17	Brown/green, cloudy
MW-4	7.10	19,000	17	Colorless, clear
MW-5	7.00	2,500	22	Colorless, clear

Table 7. Summary of Analytical Results for Metals in Ground-Water Samples Collected August 30, 1988, LCP Chemicals-New Jersey, Linden, New Jersey.

Parameter (ug/L)	New Jersey Ground-Water Quality Standards (ug/L)	-----Replicates-----a						Field	
		Sample Designation:	MW-1A	MW-2	MW-3	MW-4	MW-6	MW-5	Blank
Arsenic	50		96	BMDL	12	14	13	BMDL	--
Barium	1000		26	670	310	87	92	140	--
Beryllium	NS		--	--	--	--	--	--	--
Cadmium	10		BMDL	BMDL	--	--	BMDL	--	--
Chromium (Hex)	50		<10	<10	<10	<10	<10	<10	<10
Lead	50		--	--	--	BMDL	--	--	--
Mercury	2		0.59	--	--	--	--	--	--
Nickel	NS		--	--	--	--	--	--	--
Selenium	NS		--	--	--	--	--	--	--
Silver	50		--	--	--	--	BMDL	--	--

Laboratory Analysis by Environmental Testing and Certification.

- ug/L Micrograms per liter.
- NS No standard has been established.
- Not detected.
- BMDL Below method detection limit. (Refer to Appendix B)
- a Replicate samples from Well MW-4.

GERAGHTY & MILLER, INC.

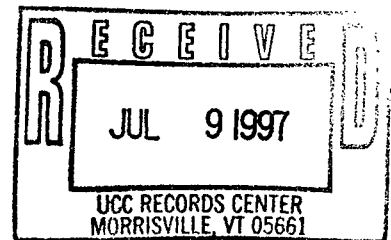
ATTACHMENT

INTERNAL MEMORANDUM

Sent to: DIFRANCO, NICK
Div/Dept: PRAXAIR-PLANT
Location: KEASBEY, NJ
Phone No.: (908)738-1200
Fax No.: (908)738-4011

From: VERMONT RECORDS CENTER
LaPorte Road, P.O. Box 489
Morrisville, VT 05661-0489
(802)888-3174
(802)888-5770 *FAX*

Date of Request: 05/05/97
Request Number: 36289
RTM Date: 01/22/96
Row/Stk/Loc: 021-05-22



Description of Request: 7 PAGE FAX INCL COVER RE: LINDEN NJ
NEGATIVE DECLARATION AFFIDAVIT

*Ed, Thanks for the information. I've added some
material to the re-filed, wish.*

Request filled by: *[Signature]*

Nick,

*You probably only need last
two pages.*

[Signature]



State of New Jersey

Christine Todd Whitman
Governor

Department of Environmental Protection

Robert C. Shinn, Jr.
Commissioner

Date: 6-11-97

UST #: 0054146

Dear Underground Storage Tank Owner/Operator:

Please find enclosed your submitted Annual Certification Questionnaire or Initial Registration Form. This form is deficient for the following reason(s):

☐ Fee Not Submitted - Amount Due \$ _____

☐ Signature Missing

☐ Using Incorrect Form (correct one attached)

☐ Tank Information Incomplete

☐ Site Plan Not Submitted

☐ Standard Reporting Form Not Filed

☐ As of Jan. 1, 1995 a facility is required to pay from 1988 to 1995 (\$100.00 per year) plus \$100.00 for first time registration.

☒ Other Please provide the date of abandonment.

Please supply the required item(s) and return to this office, with this checklist, within 15 days. Failure to do so may result in your facility being referred for enforcement action.

If you have any questions concerning this, feel free to contact me at (609) 292-2817.

Sincerely,

Sarah Mihalik

Sarah Mihalik
Bureau of State Case Management
Registration & Billing Unit

Enclosure

NOTE: THE EXACT DATE OF ABANDONMENT IS NOT KNOWN BUT AVAILABLE INFORMATION INDICATES ABANDONMENT OCCURRED ABOUT 1974.

M. A. Di Franco 6/15/97



Praxair, Inc.
Industrial Avenue
P. O. Box 237
Kearney, NJ 08832
Tel (908) 738-4000
Fax (908) 738-9586

June 3, 1997

New Jersey Department of Environmental Protection
Bureau of Revenue
CN 417
Trenton, NJ 08625-0417

Re: UST No. 0054146, Linde Gases of the Mid-Atlantic Inc., Linden, NJ

Dear Sir/Madam,

Enclosed is the completed Underground Storage Tank Facility Questionnaire for the above referenced facility along with the unpaid registration invoice. The underground storage tank at this facility to which this registration applies has been closed in place and the facility itself closed under the provisions of ISRA for case #90367. Also included with this letter is a copy of the Negative Declaration approval letter for this facility dated June 20, 1995.

Please direct any questions regarding this matter to my attention at the above address.

Very truly yours,

A handwritten signature in cursive script, appearing to read "Nicholas A. DiFranco", with a long horizontal flourish extending to the right.

Nicholas A. DiFranco
Manager, Environmental Affairs

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF RESPONSIBLE PARTY SITE REMEDIATION
BUREAU OF STATE CASE MANAGEMENT
Registration and Billing Unit
CN 028, Trenton, N.J. 08625-0028
1-609-633-0719

UNDERGROUND STORAGE TANK
FACILITY QUESTIONNAIRE

FOR STATE USE ONLY

Check In ☐ Yes ☒ No

STATUS COMCODE
Active Inactive

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

FACILITY UST # 0054146

Completion of this Registration Questionnaire will satisfy the registration requirements of the Underground Storage of Hazardous Substances Act, N.J.S.A. 58:10A-21, and the Registration and Billing Regulations N.J.A.C. 7:14B-2.

[Check appropriate box(es)]

- A. ☐ Is this a registration of a proposed or newly installed underground storage tank? (This form must be filed at least 30 days prior to operation)
- B. ☐ Is this a registration of an existing underground storage tank not presently registered?
- C. ☒ Is this a correction or amendment to an existing facility registration? UST # 0054146
- D. ☐ There have been no changes to the facility registration since last submittal. UST # _____ (Go to certification page for signatures)

If "C" is checked above, please check the appropriate type of change(s) below

- | | | |
|--|---|--|
| <input type="checkbox"/> Facility Name and/or Address Change | <input type="checkbox"/> Type of Product(s) Stored | <input type="checkbox"/> Financial Responsibility Change |
| <input type="checkbox"/> Owner Name and/or Address Change | <input type="checkbox"/> Spills, Leaks, Releases | <input type="checkbox"/> Substantial Modification(s) |
| <input type="checkbox"/> Facility Operator and/or Address Change | <input type="checkbox"/> Tank(s) and/or Piping Changes | <input type="checkbox"/> Sale or Transfer (Complete Questions 4,5,6 & 13D) |
| <input type="checkbox"/> Owner Contact Person Change | <input checked="" type="checkbox"/> Closure (Complete Question #13) | <input type="checkbox"/> Other (please specify) |

SECTION A - GENERAL FACILITY INFORMATION

1. Facility Name _____
2. Facility Location _____
NUMBER AND STREET

CITY OR MUNICIPALITY

COUNTY NIJ STATE NIJ ZIP CODE NIJ BLOCK NIJ LOT NIJ
3. Facility Operator _____ PERSON OR TITLE
Operator Address (if different than #2) _____
NUMBER AND STREET

CITY OR MUNICIPALITY
STATE NIJ ZIP CODE NIJ
4. Tank Owner _____
5. Tank Owner Address _____
NUMBER AND STREET

CITY OR MUNICIPALITY
STATE NIJ ZIP CODE NIJ
6. Contact Person (Tank Owner) _____ Contact Tele. No. _____
(Area Code) (Extension)
7. EPA ID # NIJ
8. Total number of regulated underground storage tanks at facility NIJ (Complete Section B for each tank)

Tank Identification Number	TANK NO. 0003	TANK NO. [][][][]	TANK NO. [][][][]	TANK NO. [][][][]	TANK NO. [][][][]
8. Type of Monitoring/Detection System K. None L. Other (please specify)	Tank Piping [] []	Tank Piping [] []	Tank Piping [] []	Tank Piping [] []	Tank Piping [] []
9. Overfill Protection (tank only) (Mark one X for each tank)					
A. Yes	[]	[]	[]	[]	[]
B. No	[]	[]	[]	[]	[]
10. Spill Containment Around Fill Pipe (Mark one X for each tank)					
A. Yes	[]	[]	[]	[]	[]
B. No	[]	[]	[]	[]	[]
11. Tank Status (Mark one X for each tank)	Tank Piping	Tank Piping	Tank Piping	Tank Piping	Tank Piping
A. In-use	[]	[]	[]	[]	[]
B. Empty less than 12 months	[]	[]	[]	[]	[]
C. Empty 12 months or more	[]	[]	[]	[]	[]
D. Emergency spill tank (sump)	[]	[]	[]	[]	[]
E. Emergency backup generator tank	[]	[]	[]	[]	[]
F. Abandoned in Place	X	[]	[]	[]	[]
G. Removed	[]	[]	[]	[]	[]
H. Other (please specify)					
12. If box 11B, C, or D above has been marked, indicate the estimated date last used (month/day/year)	Mo. Day Year [][][][][][]	Mo. Day Year [][][][][][]	Mo. Day Year [][][][][][]	Mo. Day Year [][][][][][]	Mo. Day Year [][][][][][]
13. Closure Information - Tank ID No.	TANK NO. 0003	TANK NO. [][][][]	TANK NO. [][][][]	TANK NO. [][][][]	TANK NO. [][][][]
A. Date abandoned in place	Mo. Day Year X 11 1974	Mo. Day Year [][][][][][]	Mo. Day Year [][][][][][]	Mo. Day Year [][][][][][]	Mo. Day Year [][][][][][]
B. Date taken temporarily out of service	[][][][][][]	[][][][][][]	[][][][][][]	[][][][][][]	[][][][][][]
C. Date removed	[][][][][][]	[][][][][][]	[][][][][][]	[][][][][][]	[][][][][][]
D. Date of Sale or Transfer	[][][][][][]	[][][][][][]	[][][][][][]	[][][][][][]	[][][][][][]
E. TMS # (if applicable)					
F. ISRA # (if applicable)	90367				

SECTION C - FINANCIAL RESPONSIBILITY

SEE NOTE ON COVER LETTER

Does this facility have a Financial Responsibility Assurance Mechanism as required in 40 CFR 280? ☐ YES ☐ NO
Please list the appropriate financial information below:

Type	Carrier / Issuing Agency
Effective Date	Expiration Date
Policy Number	Amount

SECTION D - MONITORING SYSTEMS

Does this facility have a release detection monitoring system which is in compliance with N.J.A.C. 7:14B-6?
If "No", please be aware that the facility must meet the appropriate deadline. (See "Dates to Know" on Page 4)

☐ YES ☐ NO

SECTION E - RECORDKEEPING/COMPLIANCE

Please answer all the questions in this section on a facility basis. Any one tank not in compliance requires a "NO" answer for the entire facility.

- Does this facility have cathodic protection systems for all steel tanks and piping?
If "Yes", are the systems properly operated and maintained pursuant to N.J.A.C. 7:14B-5? ☐ YES ☐ NO
- Are the performance claims and documentation of monitoring systems maintained by the owner or operator pursuant to N.J.A.C. 7:14B-5? ☐ YES ☐ NO
- Are the proper monitoring, testing, sampling, repair and inventory records kept on-site pursuant to N.J.A.C. 7:14B-5 and 6? ☐ YES ☐ NO
- Is the proper Release Response Plan kept on-site pursuant to N.J.A.C. 7:14B-5? ☐ YES ☐ NO
- Does the facility have spill and over fill protection systems pursuant to N.J.A.C. 7:14B-4? ☐ YES ☐ NO
- Have all Fill Ports been permanently marked as per API #1637 pursuant to N.J.A.C. 7:14B-5? ☐ YES ☐ NO



Praxair, Inc.
Industrial Avenue
P. O. Box 237
Keasbey, NJ 08832
Tel (908) 738-4000
Fax (908) 738-9586

June 3, 1997

New Jersey Department of Environmental Protection
Bureau of Revenue
CN 417
Trenton, NJ 08625-0417

Re: UST No. 0054146, Linde Gases of the Mid-Atlantic Inc., Linden, NJ

Dear Sir/Madam,

Enclosed is the completed Underground Storage Tank Facility Questionnaire for the above referenced facility along with the unpaid registration invoice. The underground storage tank at this facility to which this registration applies has been closed in place and the facility itself closed under the provisions of ISRA for case #90367. Also included with this letter is a copy of the Negative Declaration approval letter for this facility dated June 20, 1995.

Please direct any questions regarding this matter to my attention at the above address.

Very truly yours,

A handwritten signature in dark ink, appearing to read "Nicholas A. DiFranco", with a long horizontal flourish extending to the right.

Nicholas A. DiFranco
Manager, Environmental Affairs

INVOICE NO.
970179790NEW JERSEY UNDERGROUND STORAGE TANK PROGRAM
REGISTRATION INVOICE

UST No.	Cycle	Tanks	Type of notice	Billing Date	Due Date	Amount Due
0054146	2C	1	RENEWAL	04/03/97	05/03/97	\$ 100.00

KEEP THIS PORTION FOR YOUR RECORDS

PLEASE NOTE: Pursuant to N.J.A.C. 7:14-8:10, you may be liable for penalties of up to \$50,000 for non-payment of fees. Any penalty incurred may be recovered in a summary proceeding, N.J.S.A. 58:10A-10.

REGISTRATION PERIOD 07/01/97 TO 06/30/00	FACILITY: BILLED LINDE GASES OF MIDLANTIC INC. SOUTH WOOD AVE LINDEN, NJ 07036	FACILITY COUNTY UNION
---	---	--------------------------

Dear UST Facility Owner:

Attached herewith is an invoice for the periodic renewal of your Underground Storage Tank Facility Certification. Based upon amendments to the regulations implementing the New Jersey Underground Storage of Hazardous Substances Act (N.J.A.C.58:10A-21 et seq.), which revise the duration of the Facility Certificates and the fees associated therewith, a new schedule for implementation has been developed. The new Facility Certification Fee is \$100 per facility for a three-year facility certification cycle. This invoice reflects the first full cycle under the new regulations, as well as any applicable past due charges for this facility.

Enclosed is a Facility Questionnaire on which you will mark *changes* in your facility's status. Please note only changes. If no changes have been made at the facility, check the letter "D" on the top of the form, sign the form, and return with your payment in the enclosed envelope.

REMINDER:
- Please return the BOTTOM PORTION of this INVOICE and the FACILITY QUESTIONNAIRE with your PAYMENT.

INVOICE NO.
970179790

Send Billing Inquiries to:
NJDEP
Division of Responsible Party Site Remediation
Bureau of Applicability and Compliance - Registration & Billing Unit
CN 028
Trenton, NJ 08625-0028

or contact directly at
(609)-984-3156
292-8761

D5103F 10/95

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

INVOICE NO.
970179790NEW JERSEY UNDERGROUND STORAGE TANK PROGRAM
REGISTRATION INVOICE

UST No.	Cycle	Tanks	Type of Notice	Billing Date	Due Date	Amount Due
0054146	2C	1	RENEWAL	04/03/97	05/03/97	\$ 100.00

If there are changes to your Mailing Name or Address, check this box ☐ and print the change on the back of this invoice.

DO NOT FOLD, BEND OR MARK

Enter the Amount of your Payment

RETURN THIS PORTION with your check made payable to:

TREASURER - STATE OF NEW JERSEY
and mail to:

NJDEP
BUREAU OF REVENUE
CN 417
TRENTON, NJ 08625-0417

|||||
PRAXAIR INC

PO BOX 237
KEASBEY NJ 08832-0237

1010101010101000000504010406111110000100000001679701797909515

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF RESPONSIBLE PARTY SITE REMEDIATION
BUREAU OF STATE CASE MANAGEMENT

Registration and Billing Unit
CN 028, Trenton, N.J. 08625-0028
1-609-633-0719

UNDERGROUND STORAGE TANK
FACILITY QUESTIONNAIRE

FOR STATE USE ONLY

Check In ☐ Yes ☐ No

STATUS Active Inactive COMCODE

☐ ☐ ☐ ☐ ☐ ☐

FACILITY UST # 0054146

Completion of this Registration Questionnaire will satisfy the registration requirements of the Underground Storage of Hazardous Substances Act, N.J.S.A. 58:10A-21, and the Registration and Billing Regulations N.J.A.C. 7:14B-2.

[Check appropriate box(es)]

- A. ☐ Is this a registration of a proposed or newly installed underground storage tank? (This form must be filed at least 30 days prior to operation)
B. ☐ Is this a registration of an existing underground storage tank not presently registered?
C. ☒ Is this a correction or amendment to an existing facility registration? UST # 0054146
D. ☐ There have been no changes to the facility registration since last submittal. UST # _____ (Go to certification page for signatures)

If "C" is checked above, please check the appropriate type of change(s) below

- | | | |
|--|---|--|
| <input type="checkbox"/> Facility Name and/or Address Change | <input type="checkbox"/> Type of Product(s) Stored | <input type="checkbox"/> Financial Responsibility Change |
| <input type="checkbox"/> Owner Name and/or Address Change | <input type="checkbox"/> Spills, Leaks, Releases | <input type="checkbox"/> Substantial Modification(s) |
| <input type="checkbox"/> Facility Operator and/or Address Change | <input type="checkbox"/> Tank(s) and/or Piping Changes | <input type="checkbox"/> Sale or Transfer (Complete Questions 4,5,6 & 13D) |
| <input type="checkbox"/> Owner Contact Person Change | <input checked="" type="checkbox"/> Closure (Complete Question #13) | <input type="checkbox"/> Other (please specify) |

SECTION A - GENERAL FACILITY INFORMATION

1. Facility Name _____
2. Facility Location _____
NUMBER AND STREET

CITY OR MUNICIPALITY

COUNTY STATE ZIP CODE BLOCK LOT
3. Facility Operator _____
PERSON OR TITLE Contact Tele. No. _____
(Area Code) (Extension)
- Operator Address (if different than #2)
NUMBER AND STREET

CITY OR MUNICIPALITY

STATE ZIP CODE
4. Tank Owner _____
5. Tank Owner Address
NUMBER AND STREET

CITY OR MUNICIPALITY

STATE ZIP CODE
6. Contact Person (Tank Owner) _____
Contact Tele. No. _____
(Area Code) (Extension)
7. EPA ID # ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
8. Total number of regulated underground storage tanks at facility ☐ ☐ ☐ ☐ (Complete Section B for each tank)

SECTION C - FINANCIAL RESPONSIBILITY

 Type _____
 _____ / _____ / _____
 Effective Date _____ Expiration Date _____

 Carrier / Issuing Agency _____

 Policy Number _____ \$ _____
 Amount _____

Does this facility have a release detection monitoring system which is in compliance with N.J.A.C. 7:14B-6? ☐ YES ☐ NO
 "No", please be aware that the facility must meet the appropriate deadline. (See "Dates to Know" on Page 4)

Please answer all the questions in this section on a facility basis. Any one tank not in compliance requires a "NO" answer for the entire facility.

1. Does this facility have cathodic protection systems for all steel tanks and piping? If "Yes", are the systems properly operated and maintained pursuant to N.J.A.C. 7:14B-5?	<input type="checkbox"/> YES <input type="checkbox"/> YES	<input type="checkbox"/> NO <input type="checkbox"/> NO
2. Are the performance claims and documentation of monitoring systems maintained by the owner or operator pursuant to N.J.A.C. 7:14B-5?	<input type="checkbox"/> YES	<input type="checkbox"/> NO
3. Are the proper monitoring, testing, sampling, repair and inventory records kept on-site pursuant to N.J.A.C. 7:14B-5 and 6?	<input type="checkbox"/> YES	<input type="checkbox"/> NO
4. Is the proper Release Response Plan kept on-site pursuant to N.J.A.C. 7:14B-5?	<input type="checkbox"/> YES <input type="checkbox"/> YES	<input type="checkbox"/> NO <input type="checkbox"/> NO
5. Does the facility have spill and over fill protection systems pursuant to N.J.A.C. 7:14B-4?	<input type="checkbox"/> YES	<input type="checkbox"/> NO
6. Have all Fill Ports been permanently marked as per API #1637 pursuant to N.J.A.C. 7:14B-5?	<input type="checkbox"/> YES	<input type="checkbox"/> NO

**REPORT ON
EXCAVATION OF UNDERGROUND
FUEL OIL STORAGE TANKS
UNION CARBIDE CORPORATION
LINDEN, NEW JERSEY**

AUGUST 1988

PREPARED FOR:

**UNION CARBIDE CORPORATION
SOUTHWOOD AVENUE
LINDEN, NEW JERSEY 07036**

PREPARED BY:

**IT CORPORATION
165 FIELDCREST AVENUE
EDISON, NEW JERSEY 08818**

IT JOB #305281-04-01

RESPONSIVE TO THE NEEDS OF ENVIRONMENTAL MANAGEMENT

**REPORT ON
EXCAVATION OF UNDERGROUND
FUEL OIL STORAGE TANKS
UNION CARBIDE CORPORATION
LINDEN, NEW JERSEY**

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3	TEST METHODS FOR SAMPLE ANALYSIS

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1	SITE LOCATION MAP
2	POSTEXCAVATION SAMPLING LOCATIONS

LIST OF APPENDICES

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1.0 INTRODUCTION

IT Corporation was retained by Union Carbide Corporation (UCC) to provide professional engineering services associated with the excavation of two 4,000 gallon No. 2 fuel oil storage tanks at the Linden facility. The services provided by IT included oversight of the excavation and collection of postexcavation soil samples on July 6-7, 1988, in accordance with the New Jersey Department of Environmental Protection (NJDEP) Environmental Cleanup and Responsibility Act (ECRA) guidelines.

This report presents a description of the excavation and sampling activities, the results of soil sampling and analysis, recommendations and conclusions.

2.0 DESCRIPTION OF SITE

2.1 GENERAL

The underground storage tanks were located on a lot situated north of Tremley Point Road in Linden, New Jersey. The location of the site is shown on Figure 1 at the end of this document.

The site is presently utilized as a compressed gas transfer station. Bulk gas is delivered to the station and stored temporarily. The gas is then transferred to small cylinders and transported off-site. The fuel oil tanks were used for heating of the UCC buildings.

2.2 GEOLOGY AND HYDROGEOLOGY

The area in the vicinity of the UCC-Linden facility is underlain by the Triassic Brunswick Formation of the Newark group. Soils formations consist of soft red shales with sandstone beds. At the location of the excavation, gravel and stone were observed at 0-1 feet, packing sands at 1-3 feet with increasing amounts of clay as depth increased. Ground water was encountered at approximately 5 feet.

3.0 DESCRIPTION OF TANK EXCAVATION AND POSTEXCAVATION SAMPLING ACTIVITIES

3.1 EXCAVATION

Excavation activities were performed by IT/NEPCCO services on July 6-7, 1988. The tanks were situated beneath a concrete slab. Visual observation of the pad did not reveal any stains or reason to expect contamination of the pad. The concrete was broken up and disposed of accordingly.

Both tanks were exhumed using a backhoe and crane. The tanks were constructed of steel and one of the tanks was fiberglass coated. Visual inspection of the tanks revealed no evidence of leaks, cracks or excessive damage. The tanks were later cleaned, dismantled and disposed of at Chemical Waste Management, Inc., Model City, New York. Rinsewaters and residues were disposed of at E.I. Dupont De Nemours, Inc., Deepwater, New Jersey. Copies of the waste manifests are on file at UCC. The excavated soils were staged on triple-lined plastic in an area not utilized by UCC. The excavation pit extended approximately 36 feet north to south and 17 feet east to west to a depth of approximately 6-7 feet. Ground water was encountered at 6-7 feet.

3.2 POSTEXCAVATION SOIL SAMPLING

Fifteen postexcavation soil samples were collected from within the pit. Six of the samples were taken from the sidewalls of the excavation and nine were taken at the base. Figure 2 located at the end of this document, shows the sampling point locations. All of the samples were analyzed for total petroleum hydrocarbons and 25% of these were analyzed for base/neutral compounds +15. A summary of the analytical results is presented in Table I, at the end of this document. The Laboratory Analytical Results Reports are presented in Appendix A.

3.3 SOIL SAMPLING FOR DISPOSAL ANALYSIS

One composite soil sample was collected for disposal analysis. The sample was

analyzed for the parameters listed in Table 2, located at the end of this document. A summary of the analytical results is also presented in Table 2. The Laboratory Analytical Results Reports are presented in Appendix A.

3.4 DISPOSAL OF EXCAVATED SOILS

The soils were transported by American Industrial Marine and Freehold Cartage Inc. to Chemical Waste Management, Inc. in Model City, New York for disposal. Copies of the waste manifest are on file at UCC.

4.0 SAMPLING AND LABORATORY ANALYTICAL PROCEDURES

All laboratory analysis was performed by IT Corporation's NJDEP certified laboratory in Edison, New Jersey. Samples were analyzed in accordance with accepted methodologies for evaluating environmental samples. A summary of the analytical test methods is presented in Table 3, located at the end of this document.

5.0 QUALITY ASSURANCE/QUALITY CONTROL

The objective of the Quality Assurance/Quality Control (QA/QC) plan for this project was to provide a mechanism for the control and evaluation of data quality throughout the course of the project. The quality control data was used to define the precision and accuracy for measured contamination values.

5.1 FIELD BLANKS

In order to evaluate possible cross contamination from improper decontamination of sampling equipment, a field blank was performed each day of sampling. The field blank consisted of two sets of laboratory cleaned bottles. One set of containers was filled with laboratory demonstrated analyte-free water, while the other set was empty. Prior to sampling, the analyte-free water was passed through the clean sampling equipment and into the empty bottles. These sample were analyzed for the parameters being analyzed that day.

5.2 TRIP BLANKS

In order to evaluate the sample container preparation procedures, and any potential contamination which may have diffused into the sample containers, a trip blank was taken for each day of sampling. The trip blank consisted of two laboratory prepared vials containing laboratory determined analyte-free water. These vials accompanied the sample shuttles to and from the field each day and were analyzed for volatile organics.

5.3 LABORATORY QA/QC

All analysis was performed by a NJDEP certified laboratory according to accepted NJDEP methodologies for evaluating environmental samples for ECRA. Test methods for sample analysis are summarized in Table 3. The laboratory QA/QC report is presented with the analytical results in Appendix B.

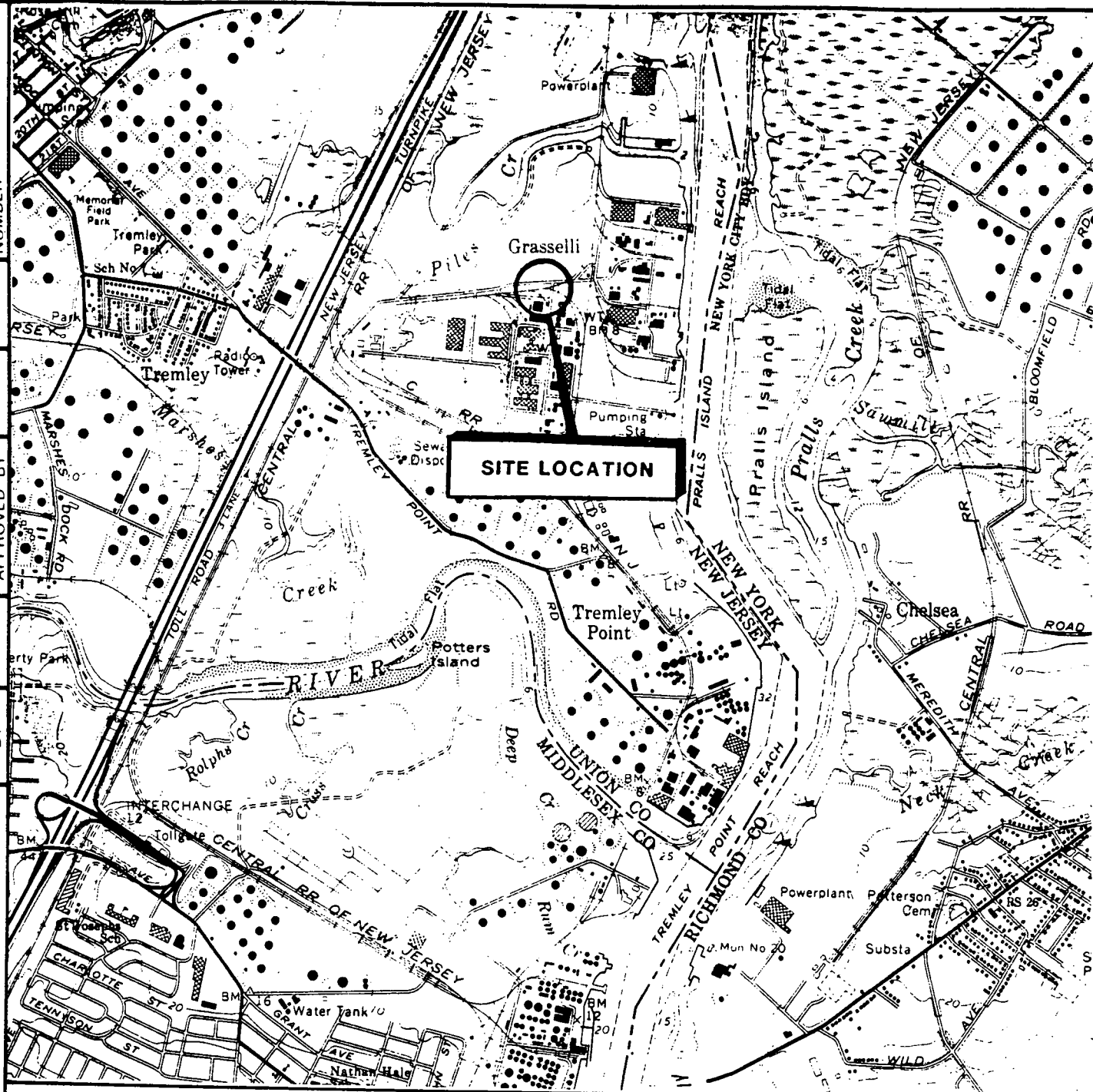
6.0 CONCLUSIONS AND RECOMMENDATIONS

The analytical results indicate the presence of total petroleum hydrocarbons in excess of 100 ppm at several locations within the excavation pit. These concentrations are not present at levels which would indicate gross contamination or a spill. Based on the fact that this area has been heavily industrialized for many years, it is probable that these concentrations are due to background levels of petroleum hydrocarbons. Therefore, it is recommended that a background sample be collected and analyzed for total petroleum hydrocarbons as a confirmation.

305281

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J.K.M.

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BY

SOURCE: USGS 7.5 MINUTE QUAD
ARTHUR KILL NY-NJ, 1966

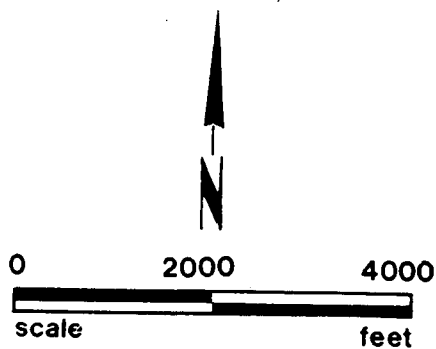


FIGURE 1
SITE LOCATION MAP

PREPARED FOR:
UNION CARBIDE CORPORATION
LINDEN, N.J.
IT PROJECT No. 305281
AUGUST 1988

IT INTERNATIONAL
TECHNOLOGY
CORPORATION

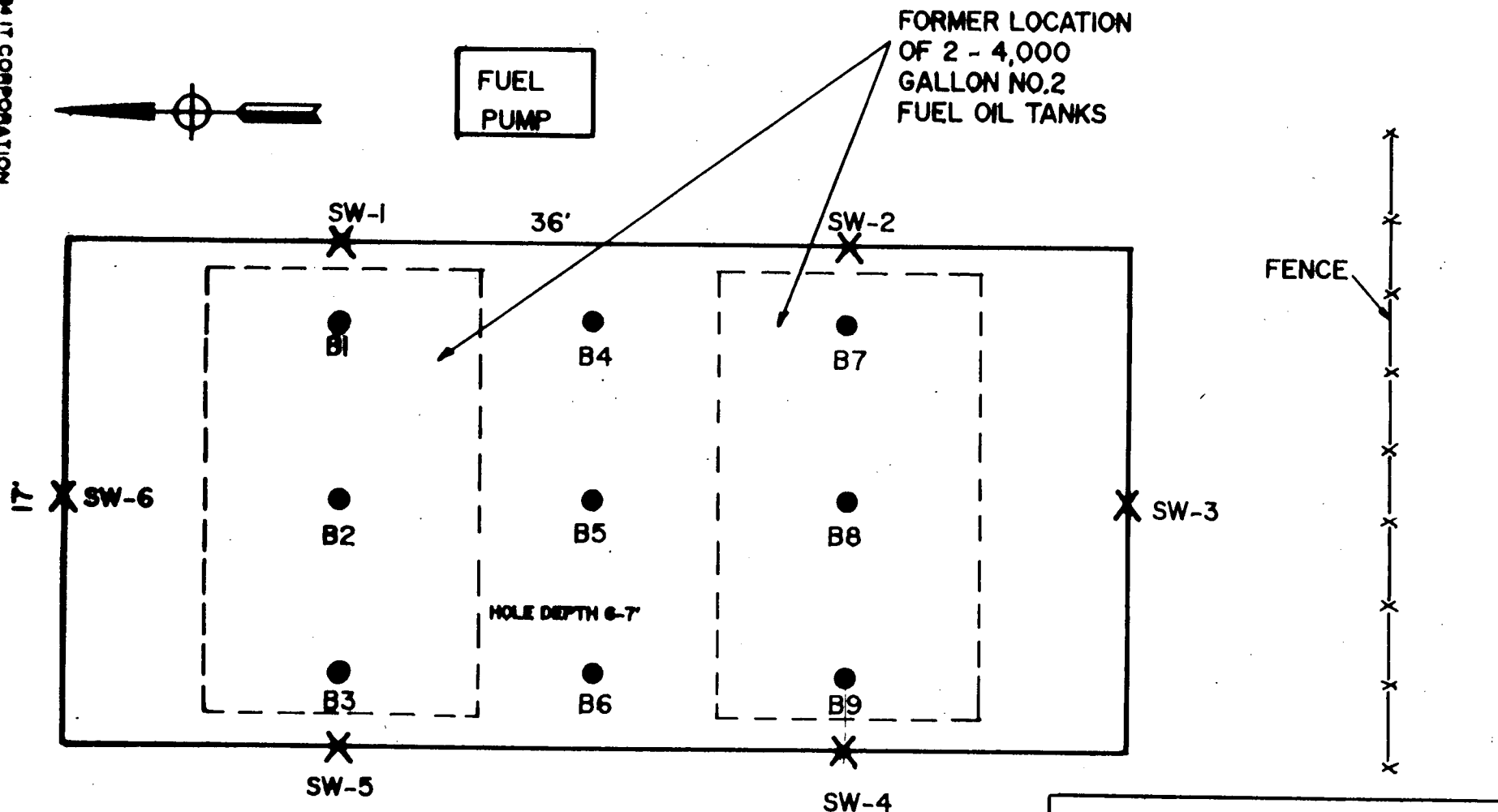
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LEGEND

- BASE SOIL BORING SAMPLE
- X SIDE WALL SOIL SAMPLE

NOT TO SCALE

FIGURE 2

POST EXCAVATION SAMPLING LOCATIONS

PREPARED FOR
UNION CARBIDE CORPORATION
LINDEN, NEW JERSEY
PROJECT NO. 305281-04-01
JULY 1988

IT INTERNATIONAL
TECHNOLOGY
CORPORATION

TABLE 1

SUMMARY OF ANALYTICAL RESULTS
OF POSTEXCAVATION SOIL SAMPLING AT
UNION CARBIDE CORPORATION
LINDEN, NEW JERSEY
JULY 7, 1988

Sample Location	SW1	SW2	SW3	SW4	SW5	SW6	B1	B2	B3	B4	B5	B6	B7	B8	B9	FB	TB
Sample Depth	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	+	
Sample Date	7/7/88	7/7/88	7/7/88	7/7/88	7/7/88	7/7/88	7/7/88	7/7/88	7/7/88	7/7/88	7/7/88	7/7/88	7/7/88	7/7/88	7/7/88	7/7/88	7/7/88

Parameter (ppm)Total Petroleum

<u>Hydrocarbons</u>	600	320	350	90	160	<24	41	240	180	340	120	70	200	170	120	<1.0	NA
---------------------	-----	-----	-----	----	-----	-----	----	-----	-----	-----	-----	----	-----	-----	-----	------	----

Base/Neutral

<u>Compounds +15</u>	ND	NA	NA	ND	NA	NA	ND	NA	NA	NA	ND	NA	NA	NA	ND	ND	NA
----------------------	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Tentatively Identified

<u>Compounds (TIC)</u>	57.5	NA	NA	ND	NA	NA	ND	NA	NA	NA	ND	NA	NA	NA	ND	ND	NA
------------------------	------	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Volatile Organic

<u>Compounds +15</u>	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
----------------------	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

ND = Non-detectable

NA = Not Analyzed

TABLE 2

SUMMARY OF ANALYTICAL RESULTS
OF SOIL FOR DISPOSAL ANALYSIS
UNION CARBIDE CORPORATION
LINDEN, NEW JERSEY

Parameter

pH	7.6
Sulfide Reactivity	<11
Cyanide Reactivity	<1.1
Ignitability	Non-Ignitable
Corrosivity	7.6

ppm (unless otherwise noted)

Arsenic	<0.010
Barium	0.064
Cadmium	<0.005
Chromium	0.012
Lead	0.069
Mercury	<0.002
Selenium	<0.005
Silver	<0.010

Endrin	<10 ug/l
Lindane	<10 ug/l
Methoxychlor	<10 ug/l
Toxaphene	<10 ug/l
2,4-D	<10 ug/l
2,4,5-TP	<10 ug/l
PCB's	ND

ENG/KD119-rpt

TABLE 3

TEST METHODS FOR SAMPLE ANALYSIS

PARAMETER(S)	METHOD(S)
Base Neutrals Plus 15 and/or Acid Extractables Plus 10	Organic compound scan analysis with confirmation of all detectable compounds by gas chromatograph/mass spectrometer (GC/MS) methodologies outlined in EPA Method 625 (F.R.: V.59 No. 209 dated 10/26/84) and "Test Methods for Evaluating Solid Waste" USEPA SW846 (revised 1984). Identification of organic nonpriority pollutant compounds ("Plus 15 or Plus 10") will be forward library search of EPA/NIH/NBS mass spectral library. <u>NOTE:</u> Substances with less than 25 percent of the internal standard response will not be searched.
Petroleum Hydrocarbons	Petroleum Hydrocarbons will be analyzed according to Method 3540 from "Test Methods for Evaluating Solid Waste" SW846 (1984 update) and Method 418.1 from "Methods for Chemical Analysis of Water and Wastes" USEPA 3/79.
Priority Pollutant Volatile Organic Compounds	Organic compound scan analysis with confirmation of all detectable organic compounds by gas chromatograph mass spectrometer (GC/MS) methodologies outlined in USEPA Method 624 (40 CFR Part 136 dated 10/20/84 and in USEPA publication 600/4-28-057 dated 7/82); and "Test Methods for Evaluating Solid Waste" USEPA SW 846 1984 Update.

TABLE 3 (cont'd)

TEST METHODS FOR SAMPLE ANALYSIS

PARAMETER(S)	METHOD(S)
<u>EP Toxicity</u>	
<p>The preparation of the leachate is based on <u>Test Methods for Evaluating Solid Waste (SW-846)</u>. An aliquot of the sample is mixed with a volume DI water equal to 16 times the sample volume. Acetic acid is added as the sample is mixed for 24 hours until the pH reaches 4.9 - 5.2. The final volume is brought to 20:1. The leachate is allowed to settle and is filtered.</p>	
Priority Pollutant Metals	Analysis in accordance with methods outlined in Section 200 of "Methods for Chemical Analysis of Water and Waste" USEPA dated 3/79; and "Test Methods for Evaluating Solid Waste" USEPA SW 846 1984 Update.
Pesticides	Organic compound scan analyses with confirmation of all detectable compounds by gs chromatograph mass spectrometer (GC/MS) methodologies outlined in USEPA Method 608 (40 CFR Part 136 dated 10/20/84 and in USEPA Publication 600/4-82-057 dated 7/82); and "Test Methods for Evaluating Solid Waste" USEPA SW 846 1984 Update.
PCB's	Organic compound scan analysis with confirmation of all detectable organic compounds by gas chromatograph mass spectrometer (GC/MS) methodologies outlined in EPA method 625 (40 CFR Part 136 dated 10/20/84 and USEPA Publication 600/4-82-057 dated 7/82); and "Test Methods for Evaluating Solid Waste" USEPA SW 846 1984 Update.

APPENDIX A



INTERNATIONAL
TECHNOLOGY
CORPORATION

Union Carbide
South Wood Avenue
Linden, NJ 07036
Attn: Mr. T. Ahlers
N.J. Lab Certification ID #12064

Job #: 305281
Date: 8/22/88
Auth: 7/7/88
Lot #: E807046
Invoice #: I01905
Sample Date: 7/7/88

REPORT OF ANALYSIS

<u>Sample #</u>	<u>Sample Identification</u>	<u>Petroleum Hydrocarbons (mg/kg Dry Wt)</u>	<u>Total Solids (%)</u>
E807046-01	Sidewall SW-1	600	87
E807046-02	Sidewall SW-2	320	81
E807046-03	Sidewall SW-3	350	84
E807046-04	Sidewall SW-4	90	92
E807046-05	Sidewall SW-5	160	89
E807046-06	Sidewall SW-6	<24	83
E807046-07	Base B-1	41	78
E807046-08	Base B-2	240	74
E807046-09	Base B-3	180	33
E807046-10	Base B-4	340	83
E807046-11	Base B-5	120	74
E807046-12	Base B-6	70	84
E807046-13	Base B-7	200	74
E807046-14	Base B-8	170	79
E807046-15	Base B-9	120	75
E807046-17	Field Blank (mg/L)	<1.0	-

cf/UC

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Linden, NJ 07036
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Job #: 305281
Date: 8/22/88
Auth: 7/7/88
Lot #: E807046
Invoice #: I01905
Sample Date: 7/7/88

REPORT OF ANALYSIS

<u>Base Neutral Compounds</u> <u>(by GC/MS)</u>	<u>E807046-01</u> <u>Sidewall SW-1</u> <u>(ug/kg Dry Wt)</u>
Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo(a)anthracene	ND
Benzo(b)fluoranthene	ND
Benzo(k)fluoranthene	ND
Benzo(a)pyrene	ND
Benzo(g,h,i)perylene	ND
Benzidine	ND
Bis(2-Chloroethyl)ether	ND
Bis(2-Chloroethoxy)methane	ND
Bis(2-Ethylhexyl)phthalate	ND
Bis(2-Chloroisopropyl)ether	ND
4-Bromophenyl Phenyl Ether	ND
Butyl Benzyl Phthalate	ND
2-Chloronaphthalene	ND
4-Chlorophenyl Phenyl Ether	ND
Chrysene	ND
Dibenzo(a,h)anthracene	ND
Di-n-Butylphthalate	ND
1,2-Dichlorobenzene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
3,3'-Dichlorobenzidine	ND

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Auth: 7/7/88
Lot #: E807046
Invoice #: I01905
Sample Date: 7/7/88

REPORT OF ANALYSIS

Base Neutral Compounds
(by GC/MS)

E807046-01
Sidewall SW-1
(ug/kg Dry Wt)

Diethylphthalate	ND
Dimethylphthalate	ND
2,4-Dinitrotoluene	ND
2,6-Dinitrotoluene	ND
Di-n-Octylphthalate	ND
1,2-Diphenylhydrazine	ND
Fluoranthene	ND
Fluorene	ND
Hexachlorobenzene	ND
Hexachlorobutadiene	ND
Hexachloroethane	ND
Hexachlorocyclopentadiene	ND
Indeno(1,2,3-cd)pyrene	ND
Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodi-n-propylamine	ND
N-Nitrosodiphenylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

ND-Nondetectable less than 760 ug/kg

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Invoice #: I01905
Sample Date: 7/7/88

REPORT OF ANALYSIS

Base Neutral Compounds
(by GC/MS)

E807046-04
Sidewall SW-4
(ug/kg Dry Wt)

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo(a)anthracene	ND
Benzo(b)fluoranthene	ND
Benzo(k)fluoranthene	ND
Benzo(a)pyrene	ND
Benzo(g,h,i)perylene	ND
Benzidine	ND
Bis(2-Chloroethyl)ether	ND
Bis(2-Chloroethoxy)methane	ND
Bis(2-Ethylhexyl)phthalate	ND
Bis(2-Chloroisopropyl)ether	ND
4-Bromophenyl Phenyl Ether	ND
Butyl Benzyl Phthalate	ND
2-Chloronaphthalene	ND
4-Chlorophenyl Phenyl Ether	ND
Chrysene	ND
Dibenzo(a,h)anthracene	ND
Di-n-Butylphthalate	ND
1,2-Dichlorobenzene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
3,3'-Dichlorobenzidine	ND

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Job #: 305281
Date: 8/22/88
Auth: 7/7/88
Lot #: E807046
Invoice #: I01905
Sample Date: 7/7/88

REPORT OF ANALYSIS

<u>Base Neutral Compounds</u> <u>(by GC/MS)</u>	<u>E807046-04</u> <u>Sidewall SW-4</u> <u>(ug/kg Dry Wt)</u>
Diethylphthalate	ND
Dimethylphthalate	ND
2,4-Dinitrotoluene	ND
2,6-Dinitrotoluene	ND
Di-n-Octylphthalate	ND
1,2-Diphenylhydrazine	ND
Fluoranthene	ND
Fluorene	ND
Hexachlorobenzene	ND
Hexachlorobutadiene	ND
Hexachloroethane	ND
Hexachlorocyclopentadiene	ND
Indeno(1,2,3-cd)pyrene	ND
Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodi-n-propylamine	ND
N-Nitrosodiphenylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

ND-Nondetectable less than 720 ug/kg

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Job #: 305281
Date: 8/22/88
Auth: 7/7/88
Lot #: E807046
Invoice #: I01905
Sample Date: 7/7/88

REPORT OF ANALYSIS

Base Neutral Compounds
(by GC/MS)

E807046-07
Base B-1
(ug/kg Dry Wt)

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo(a)anthracene	ND
Benzo(b)fluoranthene	ND
Benzo(k)fluoranthene	ND
Benzo(a)pyrene	ND
Benzo(g,h,i)perylene	ND
Benzidine	ND
Bis(2-Chloroethyl)ether	ND
Bis(2-Chloroethoxy)methane	ND
Bis(2-Ethylhexyl)phthalate	ND
Bis(2-Chloroisopropyl)ether	ND
4-Bromophenyl Phenyl Ether	ND
Butyl Benzyl Phthalate	ND
2-Chloronaphthalene	ND
4-Chlorophenyl Phenyl Ether	ND
Chrysene	ND
Dibenzo(a,h)anthracene	ND
Di-n-Butylphthalate	ND
1,2-Dichlorobenzene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
3,3'-Dichlorobenzidine	ND

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Job #: 305281
Date: 8/22/88
Auth: 7/7/88
Lot #: E807046
Invoice #: I01905
Sample Date: 7/7/88

REPORT OF ANALYSIS

Base Neutral Compounds
(by GC/MS)

E807046-07
Base B-1
(ug/kg Dry Wt)

Diethylphthalate	ND
Dimethylphthalate	ND
2,4-Dinitrotoluene	ND
2,6-Dinitrotoluene	ND
Di-n-Octylphthalate	ND
1,2-Diphenylhydrazine	ND
Fluoranthene	ND
Fluorene	ND
Hexachlorobenzene	ND
Hexachlorobutadiene	ND
Hexachloroethane	ND
Hexachlorocyclopentadiene	ND
Indeno(1,2,3-cd)pyrene	ND
Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodi-n-propylamine	ND
N-Nitrosodiphenylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

ND-Nondetectable less than 850 ug/kg

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N.J. Lab Certification ID #12064

Job #: 305281
Date: 8/22/88
Auth: 7/7/88
Lot #: E807046
Invoice #: I01905
Sample Date: 7/7/88

REPORT OF ANALYSIS

Base Neutral Compounds
(by GC/MS)

E807046-11
Base B-5
(ug/kg Dry Wt)

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo(a)anthracene	ND
Benzo(b)fluoranthene	ND
Benzo(k)fluoranthene	ND
Benzo(a)pyrene	ND
Benzo(g,h,i)perylene	ND
Benzydine	ND
Bis(2-Chloroethyl)ether	ND
Bis(2-Chloroethoxy)methane	ND
Bis(2-Ethylhexyl)phthalate	ND
Bis(2-Chloroisopropyl)ether	ND
4-Bromophenyl Phenyl Ether	ND
Butyl Benzyl Phthalate	ND
2-Chloronaphthalene	ND
4-Chlorophenyl Phenyl Ether	ND
Chrysene	ND
Dibenzo(a,h)anthracene	ND
Di-n-Butylphthalate	ND
1,2-Dichlorobenzene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
3,3'-Dichlorobenzidine	ND

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Union Carbide
South Wood Avenue
Linden, NJ 07036
Attn: Mr. T. Ahlers
N.J. Lab Certification ID #12064

Job #: 305281
Date: 8/22/88
Auth: 7/7/88
Lot #: E807046
Invoice #: I01905
Sample Date: 7/7/88

REPORT OF ANALYSIS

Base Neutral Compounds
(by GC/MS)

E807046-11
Base B-5
(ug/kg Dry Wt)

Diethylphthalate	ND
Dimethylphthalate	ND
2,4-Dinitrotoluene	ND
2,6-Dinitrotoluene	ND
Di-n-Octylphthalate	ND
1,2-Diphenylhydrazine	ND
Fluoranthene	ND
Fluorene	ND
Hexachlorobenzene	ND
Hexachlorobutadiene	ND
Hexachloroethane	ND
Hexachlorocyclopentadiene	ND
Indeno(1,2,3-cd)pyrene	ND
Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodi-n-propylamine	ND
N-Nitrosodiphenylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

ND-Nondetectable less than 1,330 ug/kg

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Job #: 305281
Date: 8/22/88
Auth: 7/7/88
Lot #: E807046
Invoice #: I01905
Sample Date: 7/7/88

REPORT OF ANALYSIS

<u>Base Neutral Compounds</u> <u>(by GC/MS)</u>	<u>E807046-16</u> <u>Field Blank</u> <u>(ug/L)</u>
Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo(a)anthracene	ND
Benzo(b)fluoranthene	ND
Benzo(k)fluoranthene	ND
Benzo(a)pyrene	ND
Benzo(g,h,i)perylene	ND
Benzidine	ND
Bis(2-Chloroethyl)ether	ND
Bis(2-Chloroethoxy)methane	ND
Bis(2-Ethylhexyl)phthalate	ND
Bis(2-Chloroisopropyl)ether	ND
4-Bromophenyl Phenyl Ether	ND
Butyl Benzyl Phthalate	ND
2-Chloronaphthalene	ND
4-Chlorophenyl Phenyl Ether	ND
Chrysene	ND
Dibenzo(a,h)anthracene	ND
Di-n-Butylphthalate	ND
1,2-Dichlorobenzene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
3,3'-Dichlorobenzidine	ND

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Job #: 305281
Date: 8/22/88
Auth: 7/7/88
Lot #: E807046
Invoice #: I01905
Sample Date: 7/7/88

REPORT OF ANALYSIS

<u>Base Neutral Compounds</u> <u>(by GC/MS)</u>	<u>E807046-16</u> <u>Field Blank</u> <u>(ug/L)</u>
Diethylphthalate	ND
Dimethylphthalate	ND
2,4-Dinitrotoluene	ND
2,6-Dinitrotoluene	ND
Di-n-Octylphthalate	ND
1,2-Diphenylhydrazine	ND
Fluoranthene	ND
Fluorene	ND
Hexachlorobenzene	ND
Hexachlorobutadiene	ND
Hexachloroethane	ND
Hexachlorocyclopentadiene	ND
Indeno(1,2,3-cd)pyrene	ND
Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodi-n-propylamine	ND
N-Nitrosodiphenylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

ND-Nondetectable less than 20 ug/L

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Attn: Mr. T. Ahlers
N.J. Lab Certification ID #12064

Job #: 305281
Date: 8/22/88
Auth: 7/7/88
Lot #: E807046
Invoice #: I01905
Sample Date: 7/7/88

REPORT OF ANALYSIS

<u>Purgeable Organic Compounds</u> <u>(by GC/MS)</u>	<u>E807046-18</u> <u>Travel Blank</u> <u>(ug/L)</u>
Acrolein	ND
Acrylonitrile	ND
Benzene	ND
Bromoform	ND
Bromomethane	ND
Carbon Tetrachloride	ND
Chlorobenzene	ND
Chlorodibromomethane	ND
Chloroethane	ND
2-Chloroethylvinyl Ether	ND
Chloroform	ND
Chloromethane	ND
Dichlorobromomethane	ND
1,1-Dichloroethane	ND
1,2-Dichloroethane	ND
1,1-Dichloroethene	ND
trans-1,2-Dichloroethene	ND
1,2-Dichloropropane	ND
cis-1,3-Dichloropropene	ND
trans-1,3-Dichloropropene	ND
Ethylbenzene	ND

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Attn: Mr. T. Ahlers
N.J. Lab Certification ID #12064

Job #: 305281
Date: 8/22/88
Auth: 7/7/88
Lot #: E807046
Invoice #: I01905
Sample Date: 7/7/88

REPORT OF ANALYSIS

<u>Purgeable Organic Compounds</u> <u>(by GC/MS)</u>	<u>E807046-18</u> <u>Travel Blank</u> <u>(ug/L)</u>
Methylene Chloride	ND
1,1,2,2-Tetrachloroethane	ND
Tetrachloroethene	ND
Toluene	ND
1,1,1-Trichloroethane	ND
1,1,2-Trichloroethane	ND
Trichloroethene	ND
Trichlorofluoromethane	ND
Vinyl Chloride	ND

ND - Nondetectable less than 50 ug/L for Acrolein and Acrylonitrile;
less than 5 ug/L for other volatile organics above.

FIGURE E9-86
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT: Union Carbide
DATA FILE: 7 B7330

IT Sample #

E8-07-046-01

[illegible]

3

IT Sample #

E8-07-046-04

vs103-form

FIGURE E9-86
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT: Union Carbide
DATA FILE: > B7352

IT Sample #

E8-07-046-07

[illegible]

FIGURE E9-86
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT: Union Carbide
DATA FILE: >B7394

IT Sample #

E8-07-046-11

[illegible]

FIGURE E9-86
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT: Union Carbide
DATA FILE: > M3479

IT Sample #

EB-07-046-16

[illegible]



Union Carbide
South Wood Avenue
Linden, NJ 07036
Attn: Mr. T. Ahlers
N.J. Lab Certification ID #12064

Job #: 305281
Date: 8/22/88
Auth: 7/7/88
Lot #: E807046
Invoice #: I01905
Sample Date: 7/7/88

REPORT OF ANALYSIS

	E807046-19 Excavated Soil For Disposal (mg/kg Dry Wt)	E.P. Toxicity Leachate (mg/L)	EPA Maximum Leachate Concentration (mg/L)
Cyanide (Reactive)	<1.1	-	-
Petroleum Hydrocarbons	390	-	-
pH (units)	7.6	-	-
Sulfide (Reactive)	<11	-	-
Total Solids	93	-	-
Ignitability	Non-Ignitable	-	-
Arsenic	-	<0.010	5.0
Barium	-	0.064	100.0
Cadmium	-	<0.005	1.0
Chromium	-	0.012	5.0
Lead	-	0.069	5.0
Mercury	-	<0.0002	0.2
Selenium	-	<0.005	1.0
Silver	-	<0.010	5.0
Endrin	-	<0.01	0.02
Lindane	-	<0.01	0.4
Methoxychlor	-	<0.01	10.0
Toxaphene	-	<0.01	0.5
2,4-D	-	<0.01	10.0
2,4,5-TP	-	<0.01	1.0

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N.J. Lab Certification ID #12064

Job #: 305281
Date: 8/22/88
Auth: 7/7/88
Lot #: E807046
Invoice #: I01905
Sample Date: 7/7/88

REPORT OF ANALYSIS

Purgeable Organic Compounds
(by GC/MS)

E807046-19
Excavated Soil
For Disposal
(ug/kg Dry Wt)

Acrolein	ND
Acrylonitrile	ND
Benzene	ND
Bromoform	ND
Bromomethane	ND
Carbon Tetrachloride	ND
Chlorobenzene	ND
Chlorodibromomethane	ND
Chloroethane	ND
2-Chloroethylvinyl Ether	ND
Chloroform	ND
Chloromethane	ND
Dichlorobromomethane	ND
1,1-Dichloroethane	ND
1,2-Dichloroethane	ND
1,1-Dichloroethene	ND
trans-1,2-Dichloroethene	ND
1,2-Dichloropropane	ND
cis-1,3-Dichloropropene	ND
trans-1,3-Dichloropropene	ND
Ethylbenzene	ND

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Attn: Mr. T. Ahlers
N.J. Lab Certification ID #12064

Job #: 305281
Date: 8/22/88
Auth: 7/7/88
Lot #: E807046
Invoice #: I01905
Sample Date: 7/7/88

REPORT OF ANALYSIS

Purgeable Organic Compounds
(by GC/MS)

E807046-19
Excavated Soil
For Disposal
(ug/kg Dry Wt)

Methylene Chloride	ND
1,1,2,2-Tetrachloroethane	ND
Tetrachloroethene	ND
Toluene	ND
1,1,1-Trichloroethane	ND
1,1,2-Trichloroethane	ND
Trichloroethene	ND
Trichlorofluoromethane	ND
Vinyl Chloride	ND

ND - Nondetectable less than 270 ug/kg for Acrolein and Acrylonitrile;
less than 27 ug/kg for other volatile organics above.

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Attn: Mr. T. Ahlers
N.J. Lab Certification ID #12064

Job #: 305281
Date: 8/22/88
Auth: 7/7/88
Lot #: E807046
Invoice #: I01905
Sample Date: 7/7/88

REPORT OF ANALYSIS

PCB Compounds
(by GC)

E807046-19
Excavated Soil
For Disposal
(ug/kg Dry Wt)

PCB-1016
PCB-1221
PCB-1232

ND
ND
ND

PCB-1242
PCB-1248
PCB-1254
PCB-1260

ND
ND
ND
ND

ND - Nondetectable less than 1,000 ug/kg

**ANALYTICAL QA/QC DATA PACKAGE
FOR
UNION CARBIDE CORPORATION-LINDEN**

SOIL SAMPLED JULY 7, 1988

APPENDIX B

Analytical Data Report Package

for

Union Carbide-Linden

<u>Field Sample #</u>	<u>Laboratory Sample #</u>	<u>Sample Location</u>	<u>Date & Time of Collection</u>
E4913	E807046-01	Sidewall SW-1	7/7/88; 10:15
E4914	E807046-02	Sidewall SW-2	7/7/88; 10:20
E4915	E807046-03	Sidewall SW-3	7/7/88; 10:25
E4916	E807046-04	Sidewall SW-4	7/7/88; 10:30
E4917	E807046-05	Sidewall SW-5	7/7/88; 10:35
E4918	E807046-06	Sidewall SW-6	7/7/88; 11:40
E4919	E807046-07	Base B-1	7/7/88; 09:55
E4920	E807046-08	Base B-2	7/7/88; 09:57
E4921	E807046-09	Base B-3	7/7/88; 10:00
E4922	E807046-10	Base B-4	7/7/88; 10:02
E4923	E807046-11	Base B-5	7/7/88; 10:04
E4924	E807046-12	Base B-6	7/7/88; 10:07
E4925	E807046-13	Base B-7	7/7/88; 10:08
E4926	E807046-14	Base B-8	7/7/88; 10:10
E4927	E807046-15	Base B-9	7/7/88; 10:12
E4330	E807046-16	Field Blank	7/7/88; NA
E4931	E807046-17	Field Blank	7/7/88; NA
E4932	E807046-18	Travel Blank	7/7/88; NA
E4928	E807046-19	Excavated Soil	7/7/88; 10:10

Laboratory Name ITAS-Edison

Certification # 12064

Supervisor/Manager Signature David N. Osborne

Printed Name David Osborne

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LABORATORY CHRONICLES

000001

LABORATORY CHRONICLE

Sample Date	<u>Date</u> <u>7/7/88</u>
Receipt/Refrigeration	<u>7/7/88</u>

Organics Extraction

1. Acids	NA
2. Base/Neutrals	<u>7/12/88</u>
3. Pesticides/PCBs	<u>7/08/88</u>

Analysis

1. Volatiles	7/21/88
2. Acids	NA
3. Base/Neutrals	<u>7/20/88 - 7/28/88</u>
4. Pesticides/PCBs	<u>7/11/88</u>

Section Supervisor
Review and Approval

D. Hackett

Inorganics

1. Metals	NA
2. Cyanides	NA
3. Phenol	NA
4. Petroleum Hydrocarbons	<u>7/08/88 - 7/11/88</u>
5. Total Solids	<u>7/08/88 - 7/11/88</u>
6.	

Section Supervisor
Review and Approval

R. Ruben

Quality Control Supervisor
Review and Approval

William French

If fractions are re-extracted and re-analyzed because initial endeavors did not meet quality control acceptance criteria, include dates for both.

C00002

NARRATIVE

C00003

Non-Conformance Summary
Union Carbide - Linden

Parameter: Base Neutral Extractable Organics

Sample ID

E807046-11

(Base B-5)

Status

Sample Date: 7/7/88

Extraction Date: 7/12/88

Analysis Date: 7/22/88

Re-extraction Date: 8/9/88

Reanalysis Date: 8/10/88

Comments: The recoveries for surrogate standards nitrobenzene-D5 and 2-fluorobiphenyl were below the acceptable QC limits. The sample was re-extracted and reanalyzed and the surrogate recoveries were below the acceptable QC limits. Low surrogate recoveries were attributed to matrix interferences. Sample results were reported from the original analysis.

METHODOLOGY SUMMARY

000005

METHODOLOGY SUMMARY

Volatile Organics - GC/MS

For the analysis of Volatile Organics EPA Method 624 is used. An inert gas is bubbled through a sample contained in a specifically designed purging chamber at ambient temperature. The purgeables are efficiently transferred from the aqueous phase to the vapor phase. The vapor is swept through a sorbent column where the purgeables are trapped. After purging is completed, the sorbent column is heated and backflushed with the inert gas to desorb the purgeables onto a gas chromatographic column. The gas chromatograph is temperature programmed to separate the purgeables which are then detected with a mass spectrometer.

Base/Neutral Extractable Organics - GC/MS (Solid)

The analysis of Base/Neutral Extractable Organics is based on Test Methods for Evaluating Solid Waste, SW-846, 2nd Edition. The extraction method (SW-846, Method 3550) uses an aliquot of sample sonicated three times with methylene chloride. The extracts are combined, dried through sodium sulfate, concentrated and analyzed by mass spectroscopy.

Base/Neutral Extractable Organics - GC/MS (Water)

The analysis of Base/Neutral Extractable Organics is based on EPA Method 625. An aliquot of sample is brought to a specific pH and is extracted three times with methylene chloride. The extracts are dried through sodium sulfate, concentrated and analyzed by mass spectroscopy.

C00006

Petroleum Hydrocarbons - IR

The analysis of petroleum hydrocarbons is based on Standard Methods, 16th Edition (503B, C, E). Water samples are prepared by separatory funnel liquid-liquid extraction using freon as the extracting solvent. Soils are prepared by soxhlet extraction using freon as the extracting solvent. Silica gel is added to remove interferences. Extracts are analyzed by infrared spectrophotometer and concentrations are determined by direct comparison with standards.

Total Solids

The analysis of total solids is based on Standard Methods, 16th Edition (209F). The sample is placed in a pre-weighed aluminum pan and dried to a constant weight. The percent solids are determined by dividing the final weight by the initial weight.

CERTIFICATES OF ANALYSIS

CG0008



Union Carbide
South Wood Avenue
Linden, NJ 07036
Attn: Mr. T. Ahlers
N.J. Lab Certification ID #12064

Job #: 305281
Date: 8/22/88
Auth: 7/7/88
Lot #: E807046
Invoice #: I01905
Sample Date: 7/7/88

REPORT OF ANALYSIS

<u>Sample #</u>	<u>Sample Identification</u>	<u>Petroleum Hydrocarbons (mg/kg Dry Wt)</u>	<u>Total Solids (%)</u>
E807046-01	Sidewall SW-1	600	87
E807046-02	Sidewall SW-2	320	81
E807046-03	Sidewall SW-3	350	84
E807046-04	Sidewall SW-4	90	92
E807046-05	Sidewall SW-5	160	89
E807046-06	Sidewall SW-6	<24	83
E807046-07	Base B-1	41	78
E807046-08	Base B-2	240	74
E807046-09	Base B-3	180	33
E807046-10	Base B-4	340	83
E807046-11	Base B-5	120	74
E807046-12	Base B-6	70	84
E807046-13	Base B-7	200	74
E807046-14	Base B-8	170	79
E807046-15	Base B-9	120	75
E807046-17	Field Blank (mg/L)	<1.0	-

cf/UC

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N.J. Lab Certification ID #12064

Job #: 305281
Date: 8/22/88
Auth: 7/7/88
Lot #: E807046
Invoice #: I01905
Sample Date: 7/7/88

REPORT OF ANALYSIS

Base Neutral Compounds ..
(by GC/MS)

E807046-01
Sidewall SW-1
(ug/kg Dry Wt)

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo(a)anthracene	ND
Benzo(b)fluoranthene	ND
Benzo(k)fluoranthene	ND
Benzo(a)pyrene	ND
Benzo(g,h,i)perylene	ND
Benzidine	ND
Bis(2-Chloroethyl)ether	ND
Bis(2-Chloroethoxy)methane	ND
Bis(2-Ethylhexyl)phthalate	ND
Bis(2-Chloroisopropyl)ether	ND
4-Bromophenyl Phenyl Ether	ND
Butyl Benzyl Phthalate	ND
2-Chloronaphthalene	ND
4-Chlorophenyl Phenyl Ether	ND
Chrysene	ND
Dibenzo(a,h)anthracene	ND
Di-n-Butylphthalate	ND
1,2-Dichlorobenzene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
3,3'-Dichlorobenzidine	ND

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680010

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Attn: Mr. T. Ahlers
N.J. Lab Certification ID #12064

Job #: 305281
Date: 8/22/88
Auth: 7/7/88
Lot #: E807046
Invoice #: I01905
Sample Date: 7/7/88

REPORT OF ANALYSIS

Base Neutral Compounds
(by GC/MS)

E807046-01
Sidewall SW-1
(ug/kg Dry Wt)

Diethylphthalate	ND
Dimethylphthalate	ND
2,4-Dinitrotoluene	ND
2,6-Dinitrotoluene	ND
Di-n-Octylphthalate	ND
1,2-Diphenylhydrazine	ND
Fluoranthene	ND
Fluorene	ND
Hexachlorobenzene	ND
Hexachlorobutadiene	ND
Hexachloroethane	ND
Hexachlorocyclopentadiene	ND
Indeno(1,2,3-cd)pyrene	ND
Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodi-n-propylamine	ND
N-Nitrosodiphenylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

ND-Nondetectable less than 760 ug/kg

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600011

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FIGURE E9-86
TENTATIVELY IDENTIFIED COMPOUNDS

DATA FILE: 7 B7330

ES-07-046-01

[illegible]



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Linden, NJ 07036
Attn: Mr. T. Ahlers
N.J. Lab Certification ID #12064

Job #: 305281
Date: 8/22/88
Auth: 7/7/88
Lot #: E807046
Invoice #: I01905
Sample Date: 7/7/88

REPORT OF ANALYSIS

Base Neutral Compounds
(by GC/MS)

E807046-04
Sidewall SW-4
(ug/kg Dry Wt)

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo(a)anthracene	ND
Benzo(b)fluoranthene	ND
Benzo(k)fluoranthene	ND
Benzo(a)pyrene	ND
Benzo(g,h,i)perylene	ND
Benzidine	ND
Bis(2-Chloroethyl)ether	ND
Bis(2-Chloroethoxy)methane	ND
Bis(2-Ethylhexyl)phthalate	ND
Bis(2-Chloroisopropyl)ether	ND
4-Bromophenyl Phenyl Ether	ND
Butyl Benzyl Phthalate	ND
2-Chloronaphthalene	ND
4-Chlorophenyl Phenyl Ether	ND
Chrysene	ND
Dibenzo(a,h)anthracene	ND
Di-n-Butylphthalate	ND
1,2-Dichlorobenzene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
3,3'-Dichlorobenzidine	ND

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660013

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Attn: Mr. T. Ahlers
N.J. Lab Certification ID #12064

Job #: 305281
Date: 8/22/88
Auth: 7/7/88
Lot #: E807046
Invoice #: I01905
Sample Date: 7/7/88

REPORT OF ANALYSIS

Base Neutral Compounds
(by GC/MS)

E807046-04
Sidewall SW-4
(ug/kg Dry Wt)

Diethylphthalate	ND
Dimethylphthalate	ND
2,4-Dinitrotoluene	ND
2,6-Dinitrotoluene	ND
Di-n-Octylphthalate	ND
1,2-Diphenylhydrazine	ND
Fluoranthene	ND
Fluorene	ND
Hexachlorobenzene	ND
Hexachlorobutadiene	ND
Hexachloroethane	ND
Hexachlorocyclopentadiene	ND
Indeno(1,2,3-cd)pyrene	ND
Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodi-n-propylamine	ND
N-Nitrosodiphenylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

ND-Nondetectable less than 720 ug/kg

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660014

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FIGURE E9-86
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT: Union Carbide

DATA FILE: 7B3745

IT Sample #

E8-07-046-04

[illegible]



INTERNATIONAL
TECHNOLOGY
CORPORATION

Union Carbide
South Wood Avenue
Linden, NJ 07036
Attn: Mr. T. Ahlers
N.J. Lab Certification ID #12064

Job #: 305281
Date: 8/22/88
Auth: 7/7/88
Lot #: E807046
Invoice #: I01905
Sample Date: 7/7/88

REPORT OF ANALYSIS

Base Neutral Compounds
(by GC/MS)

E807046-07
Base B-1
(ug/kg Dry Wt)

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo(a)anthracene	ND
Benzo(b)fluoranthene	ND
Benzo(k)fluoranthene	ND
Benzo(a)pyrene	ND
Benzo(g,h,i)perylene	ND
Benzidine	ND
Bis(2-Chloroethyl)ether	ND
Bis(2-Chloroethoxy)methane	ND
Bis(2-Ethylhexyl)phthalate	ND
Bis(2-Chloroisopropyl)ether	ND
4-Bromophenyl Phenyl Ether	ND
Butyl Benzyl Phthalate	ND
2-Chloronaphthalene	ND
4-Chlorophenyl Phenyl Ether	ND
Chrysene	ND
Dibenzo(a,h)anthracene	ND
Di-n-Butylphthalate	ND
1,2-Dichlorobenzene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
3,3'-Dichlorobenzidine	ND

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Union Carbide
South Wood Avenue
Linden, NJ 07036
Attn: Mr. T. Ahlers
N.J. Lab Certification ID #12064

Job #: 305281
Date: 8/22/88
Auth: 7/7/88
Lot #: E807046
Invoice #: I01905
Sample Date: 7/7/88

REPORT OF ANALYSIS

Base Neutral Compounds
(by GC/MS)

E807046-07
Base B-1
(ug/kg Dry Wt)

Diethylphthalate	ND
Dimethylphthalate	ND
2,4-Dinitrotoluene	ND
2,6-Dinitrotoluene	ND
Di-n-Octylphthalate	ND
1,2-Diphenylhydrazine	ND
Fluoranthene	ND
Fluorene	ND
Hexachlorobenzene	ND
Hexachlorobutadiene	ND
Hexachloroethane	ND
Hexachlorocyclopentadiene	ND
Indeno(1,2,3-cd)pyrene	ND
Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodi-n-propylamine	ND
N-Nitrosodiphenylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

ND-Nondetectable less than 850 ug/kg

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660017

FIGURE E9-86
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT: Union Carbide
DATA FILE: > B7352

IT Sample #

E8-07-046-07

[illegible]



INTERNATIONAL
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CORPORATION

Union Carbide
South Wood Avenue
Linden, NJ 07036
Attn: Mr. T. Ahlers
N.J. Lab Certification ID #12064

Job #: 305281
Date: 8/22/88
Auth: 7/7/88
Lot #: E807046
Invoice #: I01905
Sample Date: 7/7/88

REPORT OF ANALYSIS

Base Neutral Compounds
(by GC/MS)

E807046-11
Base B-5
(ug/kg Dry Wt)

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo(a)anthracene	ND
Benzo(b)fluoranthene	ND
Benzo(k)fluoranthene	ND
Benzo(a)pyrene	ND
Benzo(g,h,i)perylene	ND
Benzidine	ND
Bis(2-Chloroethyl)ether	ND
Bis(2-Chloroethoxy)methane	ND
Bis(2-Ethylhexyl)phthalate	ND
Bis(2-Chloroisopropyl)ether	ND
4-Bromophenyl Phenyl Ether	ND
Butyl Benzyl Phthalate	ND
2-Chloronaphthalene	ND
4-Chlorophenyl Phenyl Ether	ND
Chrysene	ND
Dibenzo(a,h)anthracene	ND
Di-n-Butylphthalate	ND
1,2-Dichlorobenzene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
3,3'-Dichlorobenzidine	ND

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600019



Union Carbide
South Wood Avenue
Linden, NJ 07036
Attn: Mr. T. Ahlers
N.J. Lab Certification ID #12064

Job #: 305281
Date: 8/22/88
Auth: 7/7/88
Lot #: E807046
Invoice #: I01905
Sample Date: 7/7/88

REPORT OF ANALYSIS

<u>Base Neutral Compounds</u> <u>(by GC/MS)</u>	<u>E807046-11</u> <u>Base B-5</u> <u>(ug/kg Dry Wt)</u>
Diethylphthalate	ND
Dimethylphthalate	ND
2,4-Dinitrotoluene	ND
2,6-Dinitrotoluene	ND
Di-n-Octylphthalate	ND
1,2-Diphenylhydrazine	ND
Fluoranthene	ND
Fluorene	ND
Hexachlorobenzene	ND
Hexachlorobutadiene	ND
Hexachloroethane	ND
Hexachlorocyclopentadiene	ND
Indeno(1,2,3-cd)pyrene	ND
Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodi-n-propylamine	ND
N-Nitrosodiphenylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND
ND-Nondetectable less than 1,330 ug/kg	

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FIGURE E9-86
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT: Union Carbide

DATA FILE: YB794

IT Sample

E8-07-046-11

[illegible]



Union Carbide
South Wood Avenue
Linden, NJ 07036
Attn: Mr. T. Ahlers
N.J. Lab Certification ID #12064

Job #: 305281
Date: 8/22/88
Auth: 7/7/88
Lot #: E807046
Invoice #: I01905
Sample Date: 7/7/88

REPORT OF ANALYSIS

<u>Base Neutral Compounds</u> <u>(by GC/MS)</u>	<u>E807046-16</u> <u>Field Blank</u> <u>(ug/L)</u>
Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo(a)anthracene	ND
Benzo(b)fluoranthene	ND
Benzo(k)fluoranthene	ND
Benzo(a)pyrene	ND
Benzo(g,h,i)perylene	ND
Benzidine	ND
Bis(2-Chloroethyl)ether	ND
Bis(2-Chloroethoxy)methane	ND
Bis(2-Ethylhexyl)phthalate	ND
Bis(2-Chloroisopropyl)ether	ND
4-Bromophenyl Phenyl Ether	ND
Butyl Benzyl Phthalate	ND
2-Chloronaphthalene	ND
4-Chlorophenyl Phenyl Ether	ND
Chrysene	ND
Dibenzo(a,h)anthracene	ND
Di-n-Butylphthalate	ND
1,2-Dichlorobenzene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
3,3'-Dichlorobenzidine	ND

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Union Carbide
South Wood Avenue
Linden, NJ 07036
Attn: Mr. T. Ahlers
N.J. Lab Certification ID #12064

Job #: 305281
Date: 8/22/88
Auth: 7/7/88
Lot #: E807046
Invoice #: I01905
Sample Date: 7/7/88

REPORT OF ANALYSIS

<u>Base Neutral Compounds</u> <u>(by GC/MS)</u>	<u>E807046-16</u> <u>Field Blank</u> <u>(ug/L)</u>
Diethylphthalate	ND
Dimethylphthalate	ND
2,4-Dinitrotoluene	ND
2,6-Dinitrotoluene	ND
Di-n-Octylphthalate	ND
1,2-Diphenylhydrazine	ND
Fluoranthene	ND
Fluorene	ND
Hexachlorobenzene	ND
Hexachlorobutadiene	ND
Hexachloroethane	ND
Hexachlorocyclopentadiene	ND
Indeno(1,2,3-cd)pyrene	ND
Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodi-n-propylamine	ND
N-Nitrosodiphenylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

ND-Nondetectable less than 20 ug/L

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666023

FIGURE E9-86
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT: Union Carbide

DATA FILE: > M3479

IT Sample

E8-07-046-16

[illegible]

CC0024



Union Carbide
South Wood Avenue
Linden, NJ 07036
Attn: Mr. T. Ahlers
N.J. Lab Certification ID #12064

Job #: 305281
Date: 8/22/88
Auth: 7/7/88
Lot #: E807046
Invoice #: I01905
Sample Date: 7/7/88

REPORT OF ANALYSIS

<u>Purgeable Organic Compounds</u> <u>(by GC/MS)</u>	<u>E807046-18</u> <u>Travel Blank</u> <u>(ug/L)</u>
Acrolein	ND
Acrylonitrile	ND
Benzene	ND
Bromoform	ND
Bromomethane	ND
Carbon Tetrachloride	ND
Chlorobenzene	ND
Chlorodibromomethane	ND
Chloroethane	ND
2-Chloroethylvinyl Ether	ND
Chloroform	ND
Chloromethane	ND
Dichlorobromomethane	ND
1,1-Dichloroethane	ND
1,2-Dichloroethane	ND
1,1-Dichloroethene	ND
trans-1,2-Dichloroethene	ND
1,2-Dichloropropane	ND
cis-1,3-Dichloropropene	ND
trans-1,3-Dichloropropene	ND
Ethylbenzene	ND

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600025



Union Carbide
South Wood Avenue
Linden, NJ 07036
Attn: Mr. T. Ahlers
N.J. Lab Certification ID #12064

Job #: 305281
Date: 8/22/88
Auth: 7/7/88
Lot #: E807046
Invoice #: I01905
Sample Date: 7/7/88

REPORT OF ANALYSIS

Purgeable Organic Compounds
(by GC/MS)

E807046-18
Travel Blank
(ug/L)

Methylene Chloride	ND
1,1,2,2-Tetrachloroethane	ND
Tetrachloroethene	ND
Toluene	ND
1,1,1-Trichloroethane	ND
1,1,2-Trichloroethane	ND
Trichloroethene	ND
Trichlorofluoromethane	ND
Vinyl Chloride	ND

ND - Nondetectable less than 50 ug/L for Acrolein and Acrylonitrile;
less than 5 ug/L for other volatile organics above.



Union Carbide
South Wood Avenue
Linden, NJ 07036
Attn: Mr. T. Ahlers
N.J. Lab Certification ID #12064

Job #: 305281
Date: 8/22/88
Auth: 7/7/88
Lot #: E807046
Invoice #: I01905
Sample Date: 7/7/88

REPORT OF ANALYSIS

Purgeable Organic Compounds
(by GC/MS)

E807046-19
Excavated Soil
For Disposal
(ug/kg Dry Wt)

Acrolein	ND
Acrylonitrile	ND
Benzene	ND
Bromoform	ND
Bromomethane	ND
Carbon Tetrachloride	ND
Chlorobenzene	ND
Chlorodibromomethane	ND
Chloroethane	ND
2-Chloroethylvinyl Ether	ND
Chloroform	ND
Chloromethane	ND
Dichlorobromomethane	ND
1,1-Dichloroethane	ND
1,2-Dichloroethane	ND
1,1-Dichloroethene	ND
trans-1,2-Dichloroethene	ND
1,2-Dichloropropane	ND
cis-1,3-Dichloropropene	ND
trans-1,3-Dichloropropene	ND
Ethylbenzene	ND

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000027



Union Carbide
South Wood Avenue
Linden, NJ 07036
Attn: Mr. T. Ahlers
N.J. Lab Certification ID #12064

Job #: 305281
Date: 8/22/88
Auth: 7/7/88
Lot #: E807046
Invoice #: I01905
Sample Date: 7/7/88

REPORT OF ANALYSIS

Purgeable Organic Compounds
(by GC/MS)

E807046-19
Excavated Soil
For Disposal
(ug/kg Dry Wt)

Methylene Chloride	ND
1,1,2,2-Tetrachloroethane	ND
Tetrachloroethene	ND
Toluene	ND
1,1,1-Trichloroethane	ND
1,1,2-Trichloroethane	ND
Trichloroethene	ND
Trichlorofluoromethane	ND
Vinyl Chloride	ND

ND - Nondetectable less than 270 ug/kg for Acrolein and Acrylonitrile;
less than 27 ug/kg for other volatile organics above.



Union Carbide
South Wood Avenue
Linden, NJ 07036
Attn: Mr. T. Ahlers
N.J. Lab Certification ID #12064

Job #: 305281
Date: 8/22/88
Auth: 7/7/88
Lot #: E807046
Invoice #: I01905
Sample Date: 7/7/88

REPORT OF ANALYSIS

PCB Compounds
(by GC)

E807046-19
Excavated Soil
For Disposal
(ug/kg Dry Wt)

PCB-1016	ND
PCB-1221	ND
PCB-1232	ND
PCB-1242	ND
PCB-1248	ND
PCB-1254	ND
PCB-1260	ND

ND - Nondetectable less than 1,000 ug/kg



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Union Carbide
South Wood Avenue
Linden, NJ 07036
Attn: Mr. T. Ahlers
N.J. Lab Certification ID #12064

Job #: 305281
Date: 8/22/88
Auth: 7/7/88
Lot #: E807046
Invoice #: I01905
Sample Date: 7/7/88

REPORT OF ANALYSIS

	E807046-19 Excavated Soil For Disposal (mg/kg Dry Wt)	E.P. Toxicity Leachate (mg/L)	EPA Maximum Leachate Concentration (mg/L)
Cyanide (Reactive)	<1.1	-	-
Petroleum Hydrocarbons	390	-	-
pH (units)	7.6	-	-
Sulfide (Reactive)	<11	-	-
Total Solids	93	-	-
Ignitability	Non-Ignitable	-	-
Arsenic	-	<0.010	5.0
Barium	-	0.064	100.0
Cadmium	-	<0.005	1.0
Chromium	-	0.012	5.0
Lead	-	0.069	5.0
Mercury	-	<0.0002	0.2
Selenium	-	<0.005	1.0
Silver	-	<0.010	5.0
Endrin	-	<0.01	0.02
Lindane	-	<0.01	0.4
Methoxychlor	-	<0.01	10.0
Toxaphene	-	<0.01	0.5
2,4-D	-	<0.01	10.0
2,4,5-TP	-	<0.01	1.0

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290030

QC SUMMARY

CG0031

SURROGATE RECOVERY SUMMARY

000032

Case Name _____ Laboratory ITAS-Edison Contract No. _____

046-01
046-04
046-07
046-11
046-19

Volatiles _____ out of _____, outside of QC limits
Semi-Volatiles _____ out of _____, outside of QC limits
Pesticides: _____ out of _____, outside of QC limits

Comments:

66033

Contract No. E807046

Comments:

CG0034

28

Lab Code: 464 Case No.: Contract No.: ECLA
Level: (low/med)

Level: (low/med) _____

[illegible]

S1 (DBC) - DIBUTYLCHLORENDATE

* VALUES OUTSIDE OF QC LIMITS

ADVISORY
QC LIMITS
(24-154)

DEP FORM II PEST-2

10/86

CC0035

METHOD BLANK SUMMARY

CG0036

MEINUND BLANK SUMMARY

Case

Name: Union Carbide-Linden

Lab Name: ITAS-Edison

Contract No. E807046

[illegible]

Comments:

00037

METHOD BLANK SUMMARY

Name: Union Carbide-Linden

Lab Name: ITAS-Edison

Contract No. E807046

[illegible]

Comments:

660038

INORGANICS - GENERAL CHEMISTRY
ECRA TIER II QUALITY CONTROL SUMMARY

Case Name Union Carbide

Lab
I.D.# E8-07-046

Sample
Date 7/7/88

[illegible]

Foodies

1RPD: Relative Percent Difference
vs82-form

INORGANICS - GENERAL CHEMISTRY
ECRA TIER II QUALITY CONTROL SUMMARY

Case Name Union Carbide

Lab
I.D.# E8-07-046

Sample
Date 7/7/88

[illegible]

1RPD: Relative Percent Difference
vs82-form

000000

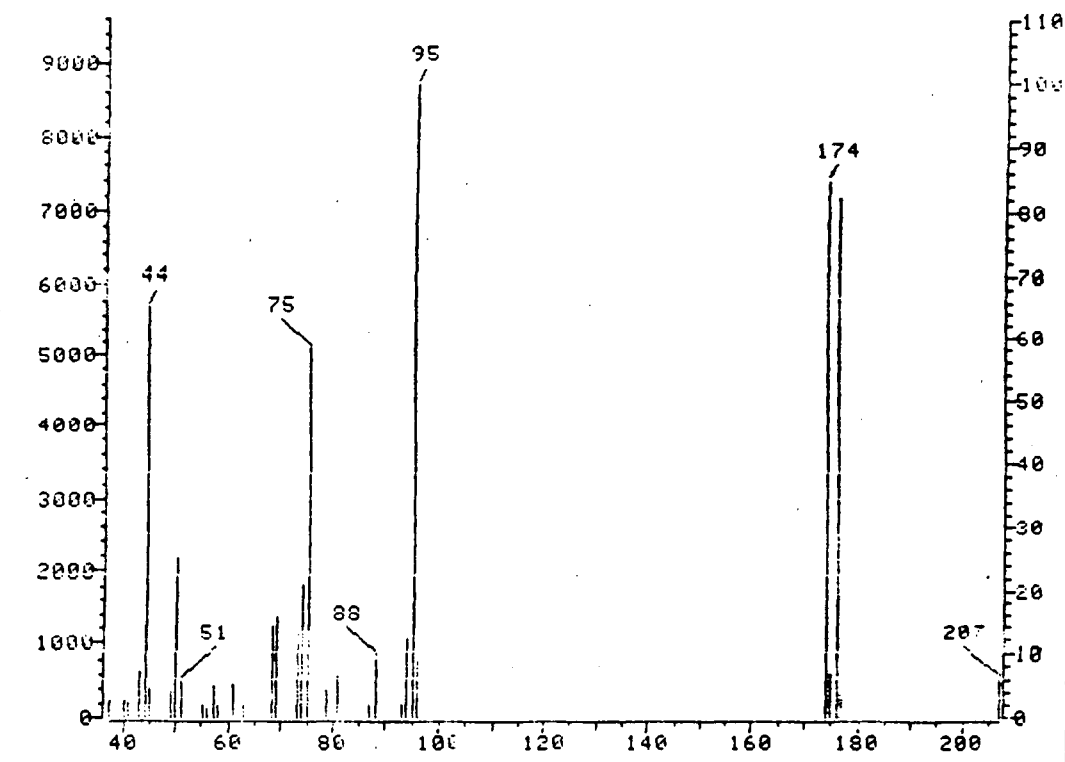
GC/MS TUNING AND MASS CALIBRATION SUMMARY

CC0041

le >P9490 50 NG BFB TUNE
pk Ab 8716

SUB ADD

Scan 311
10.20 min.



GC/MS PERFORMANCE STANDARD

Bromofluorobenzene (BFB)

m/z	Ion Abundance Criteria	% Relative Abundance Base Peak	Appropriate Peak	Status
50	15-40% of mass 95	24.92	24.92	OK
75	30-60% of mass 95	58.33	58.33	OK
95	Base peak, 100% relative abundance	100.00	100.00	OK
96	5-9% of mass 95	8.67	8.67	OK
173	Less than 1% of mass 95	0.00	0.00	OK
174	Greater than 50% of mass 95	84.76	84.76	OK
175	5-9% of mass 174	6.70	7.90	OK
176	95-101% of mass 174	82.27	97.06	OK
177	5-9% of mass 176	4.50	5.47	OK

Injection Date: 07/21/88

Injection Time: 10:47

Data File: >P9490

Scan: 311

CC0042

P9490

50 NG BEB TUNE

JGM

311

SUB ADD NRM

File: >P9490 Scan #: 311 Retn. time: 10.20

m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.
37.10	2.662	50.10	24.920	63.10	1.985	80.95	6.299	96.05	8.674
39.95	2.593	51.05	5.599	68.05	13.997	87.00	2.008	173.95	84.764
41.05	2.226	55.05	2.031	69.05	15.672	88.10	9.121	175.05	6.710
43.15	7.148	56.05	1.262	73.00	12.930	93.05	2.180	175.95	82.274
44.05	65.397	57.15	5.106	74.00	20.835	94.05	12.047	177.05	4.447
45.00	4.589	58.00	2.100	75.10	58.330	95.05	100.000	207.10	6.012
49.00	4.142	61.10	5.473	78.95	4.257				

CG0043

Initial Calibration Data
HSL Compounds

Case No: _____ Instrument ID: UNIT#1
Contractor: IT CORP. Calibration Date: 07/19/88
Contract No: _____

Minimum RF for SPCC is .300 Maximum % RSD for CCC is 30%

Compound	Laboratory ID: >P9441 >P9442 - - >P9444 -						RRT	RF	% RSD	CCC	SPCC
	RF	RF	RF	RF	RF	RF					
	20.00	50.00	100.00	150.00	200.00	500.00					
FLUOROMETHANE	1.54335	1.42449	-	-	1.14362	-	.235	1.37048	14.977		**
BROMOMETHANE	1.01177	.67750	-	-	-	-	.366	.84464	27.985		
VINYL CHLORIDE	1.30931	1.03494	-	-	-	-	.450	1.17212	16.552	*	
THLOROETHANE	.83054	.72762	-	-	.55369	-	.548	.70395	19.879		
COLEIN	-	-	-	-	.00767	-	.822	.00767	-		(Conc=, ,300.0, .80
ACRYLONITRILE	-	-	-	-	.41945	-	.855	.41845	-		(Conc=, ,800.0, .80
ETHYLENE CHLORIDE	1.36259	1.41144	-	-	1.01978	-	.727	1.26460	16.877		
CEONE	.61327	.57967	-	-	.47019	-	.802	.55438	13.496		
ARBON DISULFIDE	2.47301	2.55521	-	-	2.51198	-	.878	2.51337	1.36		
,1,1-DICHLOROETHYLENE	1.35961	1.13370	-	-	.90596	-	.979	1.13309	20.018	*	
,1,1-DICHLOROETHANE	2.34118	2.51171	-	-	1.93735	-	1.085	2.26342	13.032		**
TRANS-1,2-DICHLOROETHYLENE	1.14710	1.13715	-	-	.97313	-	1.158	1.08579	8.998		
CHLOROFORM	2.69551	2.89260	-	-	2.27296	-	1.189	2.62032	12.084		**
TRICHLOROFLUOROMETHANE	-	-	-	-	-	-	-	-	-		
TRICHLOROTRIFLUOROETHANE	-	-	-	-	-	-	-	-	-		
,2-DICHLOROETHANE-d4	3.13293	3.21548	-	-	3.04355	-	1.256	3.13065	2.747		(Conc=50.0,50.0,5
,2-DICHLOROETHANE	2.65846	2.80369	-	-	2.38974	-	1.263	2.61696	8.046		
-BUTANONE	.02184	.01987	-	-	.02524	-	.648	.02232	12.171		
,1,1-TRICHLOROETHANE	.30306	.32661	-	-	.29536	-	.704	.30835	5.381		
ARBON TETRACHLORIDE	.22113	.24655	-	-	.21005	-	.723	.22591	8.284		
BROMODICHLOROMETHANE	.20257	.21754	-	-	.21694	-	.741	.21235	3.990		
VINYL ACETATE	.31669	.33461	-	-	.37004	-	.735	.34045	7.974		
,2-DICHLOROPROPANE	.28771	.31563	-	-	.25785	-	.811	.28706	10.067	*	
TRANS-1,3-DICHLOROPROPENE	.39494	.43804	-	-	.46036	-	.822	.43112	7.713		(Conc=12.0,30.0,6
TRICHLOROETHYLENE	.30282	.32171	-	-	.26114	-	.851	.29522	10.498		
IBROMOCHLOROMETHANE	.12993	.15366	-	-	.15927	-	.869	.14762	10.552		
,1,2-TRICHLOROETHANE	.26783	.27345	-	-	.22718	-	.878	.25616	9.857		
ENZENE	.80278	.79571	-	-	.70613	-	.882	.76921	7.013		
IS-1,3 DICHLOROPROPENE	.16926	.18773	-	-	.19730	-	.822	.18476	7.713		(Conc=28.0,70.0,1
DI-ISOPROPYL ETHER	-	-	-	-	-	-	-	-	-		(Conc=, , , , ,500.0)

F - Response Factor (Subscript is amount in ppb)

RT - Average Relative Retention Time (RT Std/RT Istd)

F - Average Response Factor

RSD - Percent Relative Standard Deviation

CC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

CC0044

Initial Calibration Data
HSL Compounds

Case No: _____ Instrument ID: UNIT#1
Contractor: IT CORP. Calibration Date: 07/19/88
Contract No: _____

Minimum RF for SPCC is .300 Maximum % RSD for CCC is 30%

Compound	Laboratory ID: >P9441 >P9442 - - >P9444 -						RRT	RF	% RSD	CCC	SPCC
	RF	RF	RF	RF	RF	RF					
	20.00	50.00	100.00	150.00	200.00	500.00					
-CHLOROETHYL VINYL ETHER	.19278	.21162	-	-	.19696	-	.936	.20046	4.937		
FORMIC ACID	.07403	.07975	-	-	.10125	-	.992	.05501	16.883	**	
-METHYL-2-PENTANONE	.41522	.34268	-	-	.38032	-	.836	.37941	9.562		
-HEXANONE	.76365	.21385	-	-	.24496	-	.904	.40749	75.791		
HEXANE	-	.28404	-	-	.29227	-	.594	.28816	2.020		
TETRACHLOROETHYLENE	.29890	.31099	-	-	.25494	-	.907	.28828	10.231		
1,1,2,2-TETRACHLOROETHANE	.46774	.50373	-	-	.50373	-	.896	.49173	4.226	**	
p-TOLUENE (SURROGATE)	1.18207	1.18825	-	-	1.17801	-	.954	1.19277	.436		(Conc=50.0,50.0,5
OLUENE	.62073	.56570	-	-	.51659	-	.962	.56767	9.177	*	
HEPTANE	.74674	.43073	-	-	.38032	-	.906	.51926	38.247		
CHLOROBENZENE	.70953	.75777	-	-	.68580	-	1.006	.71770	5.110	**	
THYLBENZENE	.39815	.40756	-	-	.38376	-	1.104	.39649	3.023	*	
TYRENE	.84560	.85452	-	-	.84040	-	1.722	.84684	.943		
PERMETHYLFLUOROBENZENE (SURROGATE)	.75156	.77590	-	-	.81360	-	1.232	.78035	4.006		(Conc=50.0,50.0,5
-XYLENE	.50091	.42058	-	-	.43580	-	1.342	.45243	9.432		(Conc=20.0,50.0,1
m-P XYLENES	.22013	.47020	-	-	.45690	-	1.395	.39241	36.791		(Conc=40.0,100.0,
-DICHLOROBENZENE	.69818	.70676	-	-	.68533	-	1.589	.69676	1.548		
-DICHLOROBENZENE	.69583	.67042	-	-	.75279	-	1.640	.70634	5.971		
-DICHLOROBENZENE	.62105	.61459	-	-	.65797	-	1.640	.63120	3.108		
1-CYCLOHEXANE	1.81734	1.63909	-	-	1.56356	-	1.430	1.67333	7.787		

- Response Factor (Subscript is amount in ppb)

RT - Average Relative Retention Time (RT Std/RT Istd)

- Average Response Factor

RSD - Percent Relative Standard Deviation

CC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

000045

QUANT REPORT

Operator ID: USER3
 Output File: ^P9492::EE
 Data File: >P9492::AA
 Name: 20PPB CHECK STD
 Disc: 50 PPB ISTD/ 072188

Quant Rev: 6 Quant Time: 890721 12:53
 Injected at: 890721 12:06
 Dilution Factor: 1.0000

JGM

D File: 10001::DD
 Title: HSL VOLATILE ORGANICS
 Last Calibration: 890719 18:57

Compound	R.T.	Scan#	Area	Conc	Units	q
1) *BROMODICHLOROMETHANE (IS)	10.58	430	68958	50.00	ppb	79
6) METHYLENE CHLORIDE	7.70	284	40753	23.40	ppb	13
11) 1,1-DICHLOROETHYLENE	10.34	418	29112	18.66	ppb	89
12) 1,1,1-DICHLOROETHANE	11.44	474	52031	16.69	ppb	15
14) TRANS-1,2-DICHLOROETHYLENE	12.27	516	26712	17.73	ppt	89
15) CHLOROFORM	12.56	531	87036	23.08	ppb	52
16) 1,2-DICHLOROETHANE-d4	13.27	567	217729	49.57	ppb	100
18) 1,2-DICHLOROETHANE	13.37	572	71043	19.71	ppb	46
19) *1,4-DIFLUOROBENZENE	20.69	948	337842	50.00	ppb	100
21) 1,1,1-TRICHLOROETHANE	14.59	674	35133	17.32	ppb	19
22) CARBON TETRACHLORIDE	14.98	654	32047	21.73	ppb	94
23) BROMODICHLOROMETHANE	15.34	722	27134	18.27	ppb	7
25) 1,2-DICHLOROPROPANE	16.81	747	34739	17.96	ppb	97
26) TRANS-1,3-DICHLOROPROPENE	17.03	759	21734	7.42	ppb	1
27) TRICHLOROETHYLENE	17.62	789	40137	22.52	ppt	96
28) DIBROMODICHLOROMETHANE	18.01	808	21531	20.85	ppb	17
29) 1,1,2-TRICHLOROETHANE	18.17	816	30739	19.29	ppb	95
30) BENZENE	18.27	821	96173	18.77	ppb	1
31) CIS-1,3-DICHLOROPROPENE	17.03	759	21734	17.31	ppb	100
34) BROMOFORM	20.59	939	9572	16.88	ppb	1
35) *d5-CHLOROBENZENE (IS)	25.33	1180	305008	50.00	ppt	99
39) TETRACHLOROETHYLENE	23.03	1063	38135	21.81	ppb	10
40) 1,1,2,2-TETRACHLOROETHANE	22.77	1050	46785	15.38	ppb	99
41) d8-TOLUENE (SURROGATE)	24.29	1127	367134	49.65	ppb	10
42) TOLUENE	24.46	1136	69669	19.35	ppt	94
44) CHLOROBENZENE	25.45	1186	93373	21.04	ppb	11
45) ETHYLBENZENE	27.65	1292	49343	19.96	ppb	95
47) BROMOFLUOROBENZENE (SURROGATE)	30.37	1436	232136M	48.11	ppb	100

* Compound is ISTD

000046

58
SEMICONDUCTOR ORGANIC ELIMINATION TUNING AND MASS
CALIBRATION - DELTAFLUOROTRIPHENYLPHOSPHINE (DFIPP)

Sample Name: 11-201

Contract: _____

Lab Code: 11-201

Case No.: _____

SAS No.: _____

Seq No.: _____

File ID: 11-201

DFIPP Injection Date: 7/20/81

Instrument ID: 10 1

DFIPP Injection Time: 9:29

File	TUN ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
61	30.0 - 60.0% of mass 198	50.7
68	Less than 2.0% of mass 67	0.00 (0.001)
69	Mass 67 relative abundance	69.
70	Less than 2.0% of mass 67	0.00 (0.001)
127	40.0 - 60.0% of mass 198	50.9
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.
199	5.0 - 9.0% of mass 198	7.2
219	10.0 - 30.0% of mass 198	20.3
225	Greater than 1.00% of mass 198	2.20
441	Present, but less than mass 443	7.9
442	Greater than 40.0% of mass 198	71.4
443	17.0 - 25.0% of mass 442	12.60 (17.702)

1-Value is % mass 67 2-Value is % mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

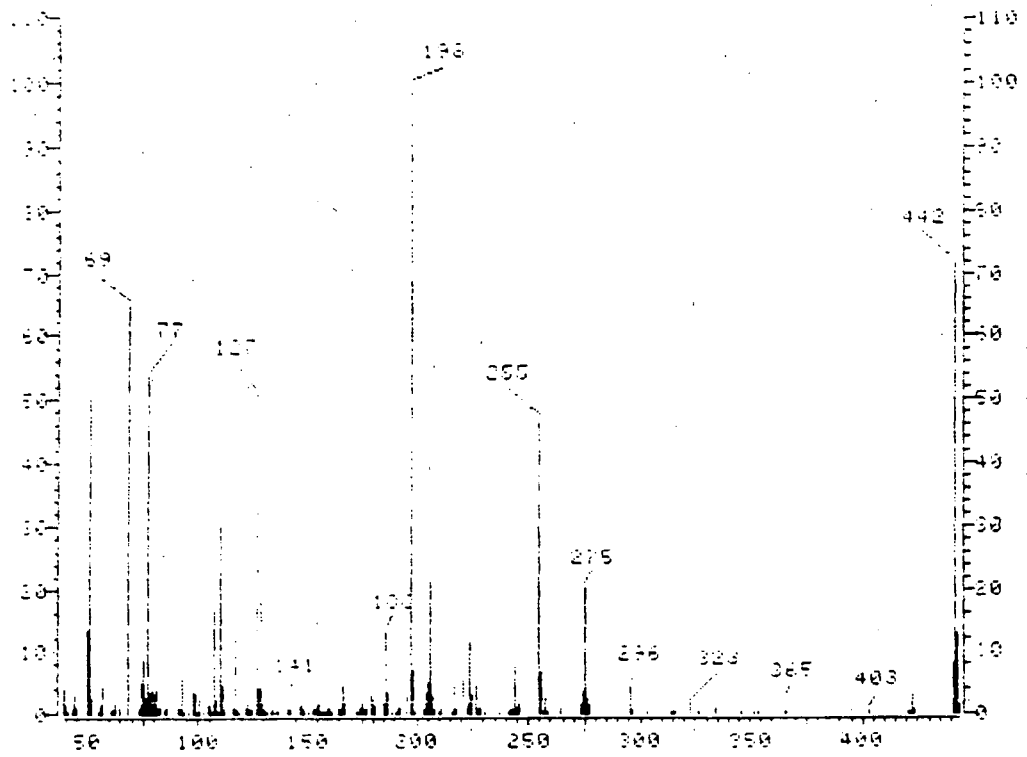
	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01					
02					
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660047

0114 103471 10 NG 1F 11

7201

Scan 110
5.49 min.



000048

EM

Page: 11421 Date: 11/11/2011 Time: 11:42

m/z	int.	m/z	int.	m/z	int.	m/z	int.	m/z	int.
77.00	3.496	78.00	1.372	142.00	1.384	192.00	1.212	257.00	1.438
79.00	1.380	96.00	4.059	143.00	1.591	193.00	1.158	258.00	2.136
81.00	1.474	99.00	3.540	147.00	1.533	196.00	2.997	259.00	1.596
82.00	1.660	100.00	1.540	148.00	2.763	198.00	100.000	260.00	1.121
84.00	2.740	101.00	2.247	149.00	1.654	199.00	7.217	273.00	1.487
85.00	1.917	103.00	1.807	151.00	1.375	200.00	1.408	274.00	3.1849
87.00	13.740	114.00	1.410	153.00	1.885	203.00	1.672	275.00	1.1184
91.00	50.731	115.00	1.180	154.00	1.726	204.00	3.261	276.00	1.453
92.00	2.439	106.00	1.444	155.00	1.275	205.00	5.151	277.00	1.135
97.00	1.425	107.00	16.508	156.00	1.659	206.00	21.319	293.00	1.342
98.00	1.497	108.00	2.406	157.00	1.534	207.00	2.712	296.00	1.626
99.00	4.440	109.00	1.492	158.00	1.522	208.00	1.840	297.00	1.780
101.00	1.723	110.00	30.363	159.00	1.354	210.00	1.414	303.00	1.534
110.00	1.732	111.00	4.502	160.00	1.885	211.00	1.875	314.00	1.249
113.00	1.869	112.00	1.606	161.00	1.215	216.00	1.459	315.00	1.525
114.00	1.038	116.00	1.903	162.00	1.315	217.00	5.346	316.00	1.366
117.00	64.867	117.00	12.014	165.00	1.999	218.00	1.726	323.00	1.139
118.00	1.197	118.00	1.789	166.00	1.756	221.00	5.463	327.00	1.331
119.00	5.238	119.00	1.315	167.00	4.629	223.00	1.449	334.00	1.921
120.00	6.921	120.00	1.083	168.00	2.049	224.00	11.513	346.00	1.354
125.00	2.745	123.00	1.668	172.00	1.468	225.00	2.934	352.00	1.420
127.00	53.660	124.00	1.765	173.00	1.537	227.00	4.707	354.00	1.513
128.00	3.342	125.00	1.705	174.00	1.068	228.00	1.684	365.00	2.199
129.00	3.786	127.00	50.924	175.00	1.719	229.00	1.131	366.00	1.306
130.00	2.937	128.00	4.098	176.00	1.543	231.00	1.378	372.00	1.873
131.00	4.014	129.00	23.959	177.00	1.080	237.00	1.432	403.00	1.585
132.00	1.173	130.00	1.797	179.00	3.759	241.00	1.270	421.00	1.453
133.00	1.897	131.00	1.852	180.00	2.472	242.00	1.666	422.00	1.477
135.00	1.705	132.00	1.267	181.00	1.218	243.00	1.657	423.00	3.168
136.00	1.095	134.00	1.597	185.00	1.701	244.00	7.883	424.00	1.693
137.00	1.119	135.00	2.667	186.00	13.238	245.00	1.101	441.00	7.946
138.00	1.053	136.00	1.753	187.00	3.426	246.00	1.740	442.00	71.442
139.00	5.997	137.00	1.873	189.00	1.828	255.00	46.856	443.00	12.629
140.00	1.504	141.00	2.979	191.00	1.369	256.00	6.722	444.00	1.251

000049

Initial Calibration Date /
REL Compounds

Lab No: _____ Instrument ID: _____
 Contractor: A. Reel-Ed-N Calibration Date: 07/11/95
 Print Job No: _____

Minimum RF for SPC is .05 Maximum % RSD for CDD is 30%

Compound	Laboratory ID: NM3471 NM3473 NM3474			RF		RRT	RF	% RSD	CDD	SPCC
	10.00	25.00	40.00	60.00	80.00					
N-NITROSO-DIMETHYLAMINE	.29454	.29452	.38179	-	-	.282	.29829	1.018		
BIS(2-CHLOROETHYL)ETHER	.76370	.66438	.72143	-	-	.705	.71000	7.098		
1,3-DICHLOROBENZENE	.64157	.58831	.61154	-	-	.729	.61494	4.423		
1,4-DICHLOROBENZENE	.64136	.55658	.60013	-	-	.741	.59902	6.995	*	
1,2-DICHLOROBENZENE	.61755	.53263	.60493	-	-	.777	.58504	7.833		
BIS(2-CHLOROISOPROPYL)ETHER	.85433	.75394	.77579	-	-	.813	.79472	6.688		
HEXACHLOROETHANE	.31136	.27162	.29571	-	-	.837	.29389	7.292		
N-NITROSO-DI-N-PROPYLAMINE	.10135	.09639	.09641	-	-	.842	.09905	4.631		**
NITROBENZENE-D5 (SURROGATE)	.56518	.44239	.48058	-	-	.858	.47662	6.796		
NITROBENZENE	.44114	.46569	.49963	-	-	.862	.48818	3.991		
ISOPHURONE	1.07279	.90668	.88453	-	-	.914	.95467	10.778		
BIS(2-CHLOROETHOXY)METHANE	.60833	.48169	.51486	-	-	.969	.53497	12.280		
1,2,4-TRICHLOROBENZENE	.37431	.33758	.36465	-	-	.993	.36048	5.537		
NAPHTHALENE	1.12154	1.06720	.98276	-	-	1.004	1.03017	11.019		
HEXACHLOROBTADIENE	.26347	.22967	.22114	-	-	1.047	.23810	9.403	*	
HEXACHLOROCYCLOPENTADIENE	.18134	.14791	.16048	-	-	1.202	.16341	10.495		**
2-FLUOROPHENOL (SURROGATE)	.54187	.51547	.59970	-	-	.538	.55208	7.822		
D5-PHENOL (SURROGATE)	.56554	.50739	.53442	-	-	.730	.53712	5.802		
2-CHLOROPHENOL	.52790	.49439	.54853	-	-	.720	.52361	5.218		
PHENOL	.60015	.56211	.61129	-	-	.733	.59118	4.361		
2,4-DICHLOROPHENOL	.30658	.26472	.28986	-	-	.996	.28505	6.458		
2-FLUOROBIPHENYL (SURROGATE)	1.84946	1.85856	1.26502	-	-	.732	1.65768	20.516		
2-CHLORONAPHTHALENE	1.45538	1.56523	1.21083	-	-	.740	1.41181	12.886		
ACENAPHTHYLENE	2.13645	2.56217	1.71916	-	-	.793	2.13926	19.704		
DIMETHYLPHTHALATE	1.75833	1.71357	1.30409	-	-	.794	1.59200	15.725		
2,6-DINITROTOLUENE	.33124	.33551	.28654	-	-	.801	.31776	8.536		
ACENAPHTHENE	1.35937	1.43165	1.00696	-	-	.817	1.26599	17.948	*	
2,4-DINITROTOLUENE	.25471	.29479	.29966	-	-	.848	.28305	8.713		
FLUORENE	1.13825	1.27110	.96015	-	-	.881	1.12316	13.891		
DIETHYLPHTHALATE	1.50970	1.64271	1.26148	-	-	.884	1.47129	13.151		

RF - Response Factor (Subscript is amount in PPB)

RRT - Average Relative Retention Time (RT Std/RT Istd)

RF - Average Response Factor

%RSD - Percent Relative Standard Deviation

CDD - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

C00050

Initial Calibration Data
HSC Compounds

Case No: Instrument ID: 2
Contractor: ITAS-EDISON Calibration Date: 07/20/86
Contract No:

Minimum RF for SPC is .05 Maximum % RSD for CCC is 30%

Compound	Laboratory ID: M3472 M3473 M3474					RRT	RF	% RSD	CCC	SPCC
	RF	RF	RF	RF	RF					
4-CHLORO-PHENYL PHENYL ETHER	.55661	.56902	.41947	-	-	.886	.56636	15.476		
N-NITROSODIPHENYLAMINE	.61839	.59693	.49988	-	-	.905	.56573	10.085	*	
1,2-DIPHENYLHYDRAZINE	1.37740	1.47384	1.20761	-	-	.905	1.35295	9.963		
4-BROMOPHENYL PHENYL ETHER	.23113	.25135	.21251	-	-	.947	.23266	8.365		
HEXACHLOROBENZENE	.31074	.31544	.25859	-	-	.961	.29376	10.460		
PHENANTHRENE	1.03996	1.10952	1.05810	-	-	1.002	1.06919	3.375		
ANTHRACENE	.94402	.98720	1.03965	-	-	1.008	1.00862	2.728		
DI-N-BUTYLPHTHALATE	1.39633	1.41791	1.52362	-	-	1.094	1.44596	4.711		
FLUORANTHENE	.79644	.79110	.92680	-	-	1.155	.83811	9.170	*	
BENZIDINE	.01233	.00248	.00631	-	-	1.180	.90694	69.223		
PIRENE	.76131	.76696	.85630	-	-	1.182	.76785	10.173		
BUTYL BENZYLPHTHALATE	.35901	.39238	.46488	-	-	1.283	.40709	13.167		
2,4,6-TRIBROMOPHENOL (SUPPL)	.11147	.12947	.12395	-	-	.918	.12363	5.265		
2-NITROPHENOL	.63098	.75428	.53534	-	-	.548	.64253	17.049		
P-CHLORO-M-CRESOL	.76845	.90024	.68299	-	-	.687	.79056	13.742		
2,4,6-TRICHLOROPHENOL	.42452	.48939	.35948	-	-	.727	.42446	15.302		
2,4-DIMETHYLPHENOL	.96733	1.09081	.80356	-	-	.571	.96057	15.145		
2,4-DINITROPHENOL	.03882	.06929	.09313	-	-	.829	.06708	40.585		
4,6-DINITRO-O-CRESOL	.09720	.12094	.14089	-	-	.899	.11968	18.275		
4-NITROPHENOL	.57309	.70526	.51634	-	-	.838	.59823	16.203		
PENTACHLOROPHENOL	.06252	.08734	.13113	-	-	.991	.09366	37.090		
TERPHENYL-d14(SURROGATE)	1.08899	1.00806	1.16462	-	-	.904	1.08722	7.202		
BENZO(a)ANTHRACENE	1.03451	1.11812	1.19021	-	-	.998	1.13095	4.775		
CHRYSENE	.96906	.90417	.87589	-	-	1.002	.91637	5.213		
3,3'-DICHLOROBENZIDINE	.18545	.16175	.13998	-	-	1.002	.16240	14.004		
BIS(2-ETHYLHEXYL)PHTHALATE	1.10034	1.18759	1.33834	-	-	1.017	1.20876	9.961		
DI-N-OCTYL PHTHALATE	1.48750	1.38071	1.48593	-	-	1.072	1.45138	4.217	*	
BENZO(b)FLUORANTHENE	.63981	.87395	.81265	-	-	1.096	.84214	3.647		
BENZO(k)FLUORANTHENE	.82515	.76826	.64935	-	-	1.097	.74758	11.999		
BENZO(a)PYRENE	.73158	.67419	.66044	-	-	1.121	.68874	5.479	*	

RF - Response Factor (Subscript is amount in PPB)

RRT - Average Relative Retention Time (RT Std/RT Istd)

RF - Average Response Factor

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

C00051

Initial Calibration Data
HSL Compounds

Case No: _____ Instrument ID: 2
Contractor: ITAS-EDISON Calibration Date: 07/20/98
Contract No: _____

Minimum RF for SPCC is .05 Maximum % RSD for CCC is 30%

Compound	Laboratory ID: M3-71 M3-73 M3-74					RRT	RF	% RSD	CCC	SPCC
	RF	RF	RF	RF	RF					
	10.00	25.00	40.00	60.00	80.00					
1,2,3,4-tetrahydronaphthalene	.6187	.4997	.57986	-	-	1.208	.56243	11.139		
1,2,3,4-tetrahydronaphthalene	.40192	.57053	.44945	-	-	1.209	.40464	9.148		
1,2,3,4-tetrahydronaphthalene	.41117	.34645	.45021	-	-	1.227	.43888	9.148		

RF - Response Factor (Subscript is amount in PPB)

RRT - Average Relative Retention Time (RT Std/RT Istd)

RF - Average Response Factor

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

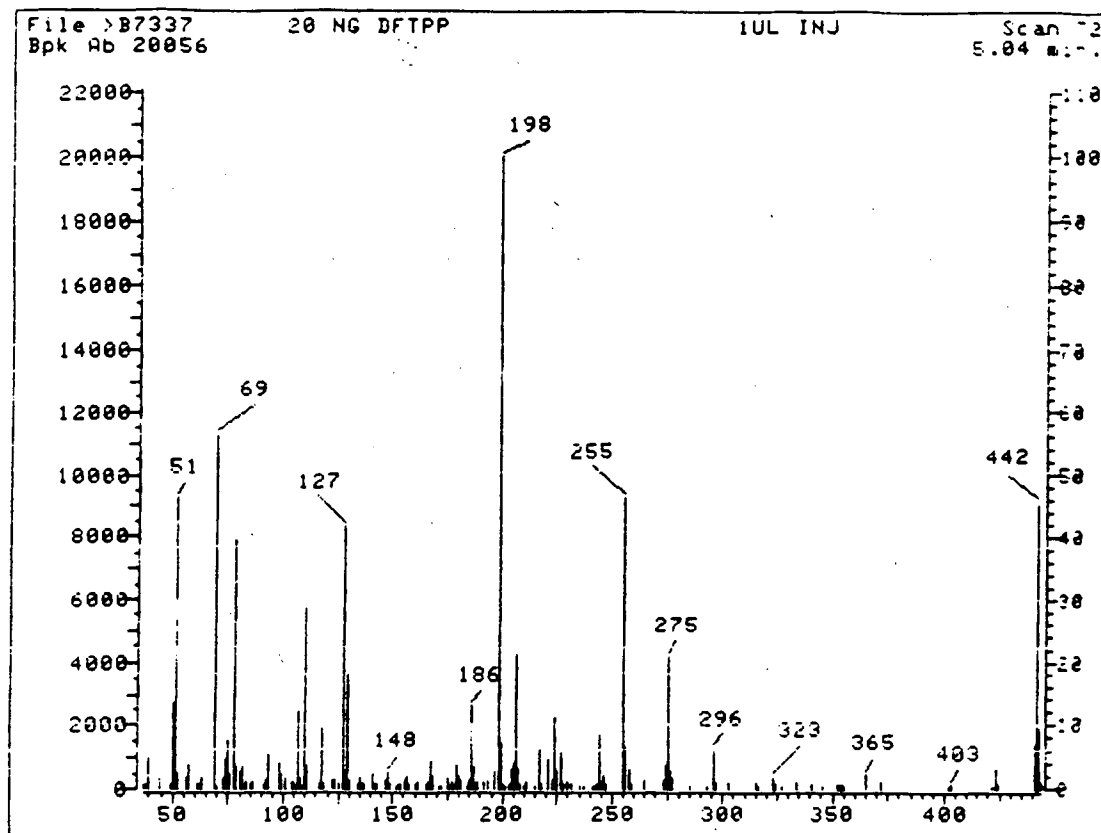
000052

File >B7337
Bpk Ab 20056

20 NG DFIPP

10L INJ

Scan 72
5.04 min



C00054

>B7337
72

20 NG DFTPP
NRM

1UL INJ

File: B7337 Scan #: 72 Retn. time: 5.04

m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.
37.15	.299	98.00	4.014	154.05	.623	204.05	2.892	274.05	3.754
38.00	.748	99.00	2.543	155.05	1.242	205.05	3.994	275.00	20.817
39.10	5.031	101.00	1.596	156.05	1.895	206.05	21.116	276.00	2.857
40.00	1.431	104.00	.957	157.10	.603	207.05	3.121	277.00	1.760
44.00	2.179	105.00	.992	160.00	.873	207.95	.698	284.90	.454
49.10	.548	106.00	.424	161.10	1.147	210.25	.484	292.95	.299
50.10	13.632	107.00	12.151	165.00	.823	211.05	1.192	296.05	6.118
51.10	46.240	108.00	1.785	166.00	.932	215.05	.494	297.05	.917
52.10	2.219	109.10	.494	167.00	4.562	216.90	6.163	303.05	.912
55.95	1.765	110.00	28.734	168.00	1.960	218.00	.823	315.10	.878
56.95	3.615	111.00	3.794	171.25	.304	221.00	4.712	316.00	.459
61.05	.693	116.15	.613	171.95	.479	223.00	1.237	323.05	1.740
62.05	.663	117.05	9.299	175.05	1.551	224.10	11.024	323.95	.608
63.05	1.870	118.05	.748	175.95	.444	225.00	2.862	327.05	.504
69.00	56.168	121.95	1.227	176.95	1.172	227.00	5.794	334.15	1.062
70.00	.424	122.95	1.281	178.05	.454	228.00	.798	340.90	.643
73.00	1.880	125.05	.583	178.95	3.869	229.10	1.007	346.00	.414
74.00	4.797	127.00	41.544	180.05	2.174	231.05	.558	351.95	.613
75.00	7.295	128.10	2.628	180.95	1.296	235.05	.409	353.05	.409
76.10	2.403	129.00	18.324	184.25	.304	237.05	.474	354.05	.623
77.10	39.205	130.00	1.321	185.05	1.511	240.85	.394	355.15	.364
78.10	3.141	134.10	.653	186.00	13.048	241.95	.534	365.00	2.388
79.00	3.525	135.00	1.795	187.10	3.296	243.15	.708	372.10	1.107
80.00	2.608	136.10	.763	188.00	.499	244.05	8.541	402.00	.474
81.10	3.435	137.10	.818	189.00	1.052	245.15	1.017	403.00	.583
81.95	.833	141.00	2.413	191.90	1.127	246.00	1.940	421.85	.469
83.05	1.137	142.05	.803	193.10	1.356	247.00	.598	423.05	3.051
85.05	.683	143.05	.698	196.00	2.772	255.00	46.320	424.00	.718
85.95	.888	147.05	1.526	198.00	100.000	256.00	6.267	440.95	6.901
90.85	.568	148.05	2.677	199.00	7.065	258.00	3.086	442.05	45.478
91.05	.573	148.95	.653	200.10	.548	258.90	.548	443.05	9.429
92.05	1.232	152.05	.404	201.35	.454	265.05	1.242	444.05	1.052
93.05	5.485	153.05	.653	203.05	.693	273.05	1.501		

000055

Initial Calibration Data
 HPL Compounds

Case No: Instrument ID: 1

Report: 1990-BUOLCH

Calibration Date: 12/21/98

Contract: 101

Minimum R_F for SPCC is .05 Maximum % RSD for CC is 10%

Compound	Laboratory ID: 187338 187339 187340					RRT	RS	% RSD	CC	SPCC
	RR	RS	RR	RS	RR					
N-NITROSO-N-METHYLAMINE	.10887	.10927	.121485	-	-	.1218	.17022	37.446		
5,6-DI-1-CHLOROETHYLSEIME-	.13387	.13513	.131534	-	-	.134	.131018	3.394		
1,3-DI-1-CHLOROBENZENE	.13874	.140182	.137155	-	-	.134	.13465	4.663		
1,4-DI-1-CHLOROBENZENE	.140470	.14084	.139745	-	-	.135	.140085	9.10		
1,2-DI-1-CHLOROBENZENE	.140034	.14013	.138449	-	-	.133	.139204	2.508		
5,6-DI-1-CHLOROETHYL SEIME	.16235	.160746	.167545	-	-	.1310	.16541	3.564		
HE-1-CHLOROETHANE	.17061	.16914	.17631	-	-	.134	.180002	2.546		
N-NITROSO-N-NITROPHYLAMINE	.18634	.18516	.186723	-	-	.140	.18825	1.521	**	
NITROBENZENE-DI-SULFONIC E.	.18627	.18646	.18517	-	-	.144	.17531	4.652		
NITROBENZENE	.18651	.1861	.18481	-	-	.153	.17764	10.430		
1,2-DI-1-CHLOROBENZENE	.18451	.18414	.18161	-	-	.141	.18337	4.341		
5,6-DI-1-CHLOROETHYL SEIME	.18645	.18655	.18675	-	-	.1370	.18335	8.735		
1,2-DI-1-CHLOROBENZENE	.144182	.145695	.14655	-	-	.149	.146131	5.044		
NITROBENZENE	1.01183	1.03176	1.01287	-	-	1.117	1.04855	3.337		
HE-1-CHLOROETHYL ADIENE	.129145	.13135	.13151	-	-	1.050	.131673	7.354	*	
HE-1-CHLOROETHYL ADIENE	.12912	.13075	.130338	-	-	1.235	.13208	14.347	**	
DI-1-CHLOROETHYL SULFONIC E.	.124421	.12639	.12020	-	-	.149	.12694	3.946		
DI-1-CHLOROETHYL SULFONIC E.	.129435	.130495	.131217	-	-	.188	.13353	2.948		
2-CHLOROETHYL	.131745	.13174	.13055	-	-	.187	.130345	4.750		
ETHYL	.13535	.13555	.13822	-	-	.182	.132254	3.984		
2,4-DI-1-CHLOROPHENOL	.135775	.13943	.142717	-	-	.175	.139304	6.314		
1-CHLOROETHYL SULFONIC E.	.164710	.164911	.164557	-	-	.137	.16145	15.462		
1-CHLOROPHENYLAMINE	.16004	.160491	.16155	-	-	.144	.155134	8.650		
DI-1-CHLOROETHYL	.187985	.17078	.18025	-	-	.197	.13353	6.765		
DI-1-CHLOROETHYL	.173725	.17585	.17589	-	-	.198	.17065	13.747		
2,6-DI-1-CHLOROTOLUENE	.19673	.13428	.15879	-	-	.1304	.1665	18.778		
ADEN-1-THIENE	.18589	.17257	.18907	-	-	.181	.151517	11.661	*	
2,4-DI-1-CHLOROTOLUENE	.12692	.12897	.13955	-	-	.151	.128517	15.542		
FLUORINE	.16751	.16753	.16071	-	-	.184	.16445	11.385		
DI-1-CHLOROETHYL	.16497	.16452	.16025	-	-	.153	.171341	14.039		

RR - Response Factor (subscript is amount in RRT)

RS - Average Relative Retention Time (RRT) Standard Error

RR - Average Response Factor

%RS - Percent Relative Standard Deviation

CC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

000056

Initial Calibration Data
 10-MS Compounds

Case No: Instrument ID: 1

Contract: 17AS-0150N Calibration Date: 07-01-98

Contract No:

Minimum R_F for SPC is 10%

Maximum % RSD for ODC is 30%

Laboratory ID:	57338	57339	57340	-	-				
Compound	R _F	R _F	R _F	R _F	R _F	RRT	RF	% RSD	ODC SPC
4-CHLORO-3-NITROPHENYL ETHER	1.11774	1.19272	1.28805	-	-	.889	1.30284	7.163	
N-NITROBIS(4-CHLOROPHENYL)AMINE	1.1582	1.41071	1.44671	-	-	.906	1.46108	10.161	*
1,1-DIPHENYL-2-PICOLYLAMINE	1.29542	1.67935	1.65679	-	-	.908	1.70721	9.716	
4-BROMOPHENYL PHENYL ETHER	1.1318	1.21230	1.19363	-	-	.948	1.20804	3.922	
4-CHLORO-2-FLUOROBENZENE	1.19946	1.31485	1.17492	-	-	.963	1.29608	6.649	
PHENANTHRENE	1.12595	1.04162	1.04930	-	-	1.002	1.12229	3.401	
ANTHRACENE	1.18506	1.15042	1.04061	-	-	1.008	1.12770	6.339	
DI-N-BUTYL-2,2-THALATE	1.12046	1.21275	1.03483	-	-	1.091	1.15768	19.581	
FLUORANTHENE	1.13274	1.13953	1.29537	-	-	1.156	1.02121	27.013	*
BENZOPHENE	1.16560	1.02257	1.03637	-	-	1.172	1.03682	41.432	
XYLENE	1.11265	1.76826	1.65473	-	-	1.177	1.35628	27.558	
2,4-DICHLORO-1,3-DITHIAZOLE	1.1525	1.03034	1.04431	-	-	1.077	1.11637	14.405	
2,4-DICHLORO-1,3-DITHIAZOLE	1.1525	1.1556	1.14601	-	-	.916	1.14434	5.414	
2-NITROPHENOL	1.14383	1.15366	1.10508	-	-	.950	1.19081	17.423	
1,4-DICHLORO-2-FLUOROBENZENE	1.16435	1.13519	1.13316	-	-	.678	1.22653	17.571	
2,4,6-TRICHLORO-1,3-DITHIAZOLE	1.1532	1.10132	1.11763	-	-	.726	1.20526	5.336	
2,4-DIMETHYLPHENOL	-	1.17613	1.14584	-	-	.665	1.15809	10.956	
2,4-DIMETHYLPHENOL	1.10709	1.11108	1.04377	-	-	.830	1.10532	5.477	
4,6-DIMETHYL-2-OROBENZOL	1.16131	1.13037	1.13903	-	-	.900	1.14471	10.759	
4-NITROPHENOL	1.15312	1.15264	1.12143	-	-	.846	1.15720	30.748	
PENTACHLORO-1,3-DITHIAZOLE	1.16008	1.17693	1.18268	-	-	.787	1.17289	5.702	
TEREPHTHALO-2,4-DICHLOROPHENYLAMINE	1.16164	1.139612	1.175108	-	-	.908	1.194295	48.544	
BENZENE ANTHRAQUONE	1.10951	1.164731	1.164921	-	-	.992	1.170168	10.944	
CHRYSENE	1.19246	1.103236	1.131169	-	-	1.000	1.112124	14.517	
3,4-DICHLORO-1,3-DITHIAZOLE	1.13618	1.12295	1.10246	-	-	1.001	1.11187	31.345	
BIS(2,4,6-TRICHLORO-1,3-DITHIAZOL-2-YL)AMINE	1.16252	1.189320	1.16574	-	-	1.020	1.111762	17.437	
DI-N-DECYL PHTHALATE	1.16590	1.101141	1.164794	-	-	1.075	1.108601	40.315	*
BENZOTRIFLUORANTHENE	1.14942	1.15081	1.11079	-	-	1.035	1.19734	39.124	
BENZOTRIFLUORANTHENE	1.15182	1.15053	1.15726	-	-	1.097	1.11990	25.356	
BENZOTRIFLUORANTHENE	1.13752	1.15652	1.15474	-	-	1.121	1.13653	31.801	*

R_F = Response Factor Subscript is amount in PRS

RRT = Average Relative Retention Time (RI Std/RF Std)

RF = Average Response Factor

%RSD = Percent Relative Standard Deviation

ODC = Calibration Check Compounds (*) SPC = System Performance Check Compounds (**)

000057

Initial Calibration Data
 10-MS Compounds

Case No: _____ Instrument ID: 2
 Contractor: W. H. H. H. H. Calibration Date: 01/21/00
 Contract No: _____

Minimum RF for SPC is 100 Maximum % RSD for CQC is 30%

Compound	Laboratory ID: 80138 80139 80140					RF	RF	% RSD	CQC	SPC
	80138	80139	80140	80141	80142					
1,2,3,4-tetrahydronaphthalene	1.40436	1.22578	1.94349	-	-	1.206	1.71122	33.730		
1,2,3,4-tetrahydronaphthalene	1.14415	1.46470	1.62162	-	-	1.207	1.44349	41.487		
1,2,3,4-tetrahydronaphthalene	1.16546	1.61954	1.73085	-	-	1.223	1.67145	32.746		

RF - Response Factor (Subscript is amount in PPM)

RF - Average Relative Retention Time (RT) Std. RT (Std)

RF - Average Response Factor

%RSD - Percent Relative Standard Deviation

CQC - Calibration Check Compounds (*) SPC - System Performance Check Compounds (**)

C00058

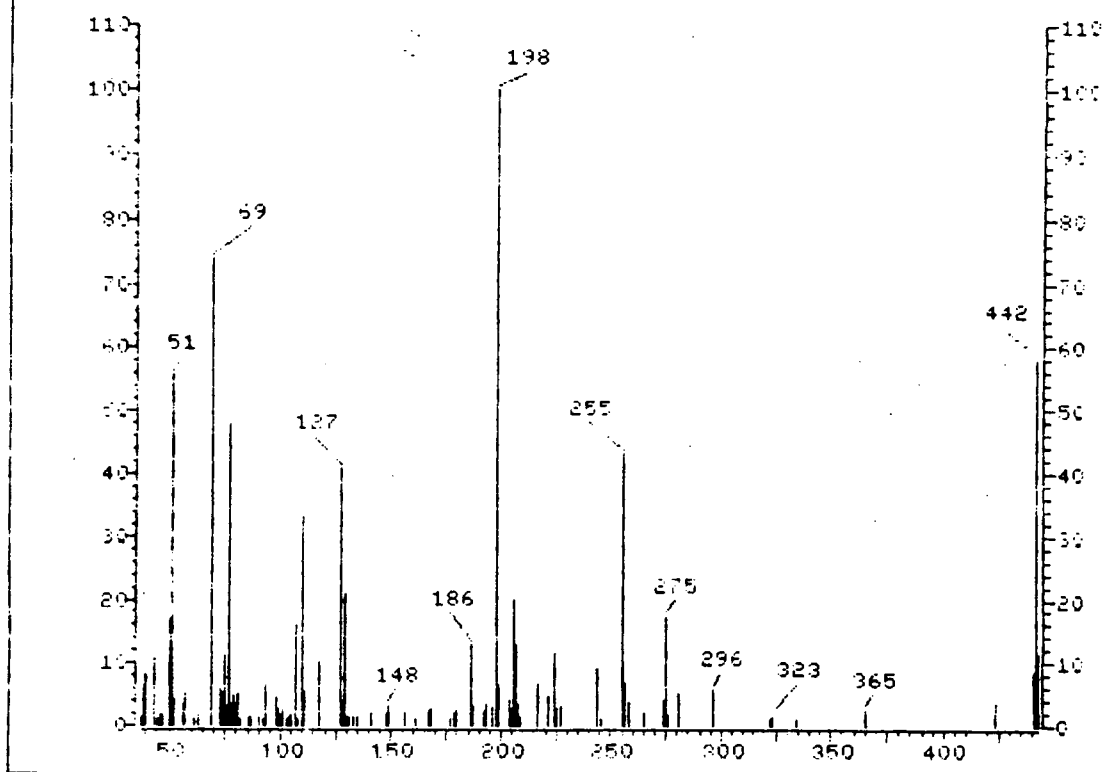
File: P7183
Bpk AB 100

20 NG OFTPP

ADD NRM BIG

1UL INJ

Scan 114
5.91 min.



CG0060

B7383
114

20 NG DFTPP
ADD NRM BIG

10L INJ

File: B7383 Scan #: 114 Retn. time: 5.91

m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.
37.55	1.334	76.20	3.222	108.20	1.207	176.95	2.044	227.00	3.174
39.10	6.445	77.10	47.741	110.10	33.353	178.85	1.996	244.05	9.258
39.90	7.983	78.10	3.475	111.10	5.520	180.05	2.823	245.75	1.178
43.30	1.285	79.10	4.692	117.05	9.988	186.15	12.714	255.00	42.932
44.00	11.215	80.00	3.485	127.15	40.518	186.95	2.911	256.00	6.873
45.30	1.188	81.00	5.140	127.90	3.368	192.00	2.453	258.00	3.709
46.80	1.811	81.90	1.139	128.10	1.733	193.10	3.524	264.75	1.918
47.40	1.606	85.25	1.285	129.00	20.911	196.20	3.222	274.15	3.904
50.10	16.676	85.95	1.373	129.70	1.236	198.00	100.000	275.05	17.222
51.10	55.705	90.75	1.421	129.90	1.373	199.10	6.386	276.05	1.626
52.10	4.108	92.05	1.207	131.00	1.451	204.05	4.186	281.10	5.053
55.85	3.446	93.05	6.464	133.00	1.431	205.05	2.560	295.95	5.617
56.95	5.870	98.00	4.254	135.00	1.412	206.05	19.694	322.85	1.207
61.15	1.197	99.00	2.872	141.20	2.531	207.05	12.636	323.15	1.528
62.95	1.567	100.00	1.655	147.15	1.908	208.15	3.505	334.05	1.197
69.00	73.851	101.00	2.531	148.15	3.174	209.15	1.499	364.95	2.512
73.10	5.831	102.60	1.168	156.05	1.976	216.95	6.746	423.05	3.855
74.00	5.432	104.00	1.460	160.90	1.207	221.10	4.702	441.10	8.586
75.00	11.166	105.10	1.636	167.00	2.327	224.10	11.303	442.00	58.255
75.90	2.998	107.00	15.674	168.00	2.599	225.10	2.658	443.05	11.429

C00061

Initial Calibration Data
HSL Compounds

Case No: _____ Instrument ID: UNIT #4

Contractor: ITAS-EDISON Calibration Date: 07/27/88

Contract No: _____

Minimum RF for SPCC is 0.05

Maximum % RSD for CCC is 30.0%

Compound	Laboratory ID: >B7386 >B7385 >B7387					RRT	RF	% RSD	CCC	SPCC
	RF	RF	RF	RF	RF					
	10.00	25.00	40.00	60.00	80.00					
N-nitroso-dimethylamine	.52128	.70990	.89030	-	-	.412	.70716	26.094		
2-Fluorophenol (SURR)	1.14752	1.23738	1.19761	-	-	.713	1.19417	3.771		
Phenol-d5 (SURR)	1.33360	1.31303	1.42132	-	-	.941	1.35599	4.241		
Phenol	1.86199	1.71508	1.86218	-	-	.944	1.81308	4.681	*	
bis(-2-Chloroethyl)Ether	1.63203	1.61836	1.77839	-	-	.955	1.67626	5.292		
2-Chlorophenol	1.18965	1.05275	1.24159	-	-	.958	1.16133	8.400		
1,3-Dichlorobenzene	1.41044	1.39212	1.35890	-	-	.998	1.38715	1.884		
1,4-Dichlorobenzene	1.43007	1.40071	1.36692	-	-	1.003	1.39923	2.258	*	
Benzyl Alcohol	.81817	.77463	.84822	-	-	1.048	.81367	4.547		
1,2-Dichlorobenzene	1.38505	1.33407	1.39864	-	-	1.048	1.37259	2.480		
2-Methylphenol	1.11484	1.11790	1.21900	-	-	1.085	1.15058	5.151		
bis(2-Chloroisopropyl)ether	3.24324	2.55969	4.20303	-	-	1.089	3.33532	24.751		
4-Methylphenol	1.29364	1.11163	1.10632	-	-	1.110	1.17053	9.111		
N-Nitroso-Di-n-propylamine	1.63672	1.41943	1.77773	-	-	1.124	1.61129	11.202	**	
Hexachloroethane	.72856	.69182	.74301	-	-	1.124	.72113	3.660		
Nitrobenzene-d5 (SURR)	.41001	.41820	.41565	-	-	.868	.41462	1.011		
Nitrobenzene	.26330	.26529	.28724	-	-	.824	.27195	4.886		
Isophorone	1.26427	1.23108	1.25200	-	-	.921	1.24912	1.343		
2-Nitrophenol	.19800	.19869	.19433	-	-	.933	.19781	1.187		
2,4-Dimethylphenol	.39901	.39205	.37843	-	-	.950	.38983	2.685		
Benzoic Acid	.20033	.21256	.16914	-	-	.979	.19481	11.542		
bis(-2-Chloroethoxy)Methane	.56009	.55388	.54455	-	-	.968	.55284	1.415		
2,4-Dichlorophenol	.34694	.34303	.29806	-	-	.979	.32934	8.248	*	
1,2,4-Trichlorobenzene	.35119	.36042	.34834	-	-	.993	.35331	1.787		
Naphthalene	1.07128	1.07130	1.01830	-	-	1.084	1.05363	2.903		
4-Chloroaniline	.49304	.54000	.39051	-	-	1.823	.47452	16.110		
Hexachlorobutadiene	.24783	.22434	.25692	-	-	1.043	.24383	6.919	*	
4-Chloro-3-methylphenol	.49067	.50219	.34093	-	-	1.122	.44468	20.235	*	
2-Methylnaphthalene	.76189	.73195	.60727	-	-	1.138	.70837	11.709		
Hexachlorocyclopentadiene	.26416	.25107	.45577	-	-	.883	.32367	35.403	**	

RF - Response Factor (Subscript is amount in $\mu\text{G}/\text{ML}$)

RRT - Average Relative Retention Time (RT Std/RT Istd)

RF - Average Response Factor

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Initial Calibration Data
HSL Compounds

Case No: _____ Instrument ID: UNIT #4
Contractor: ITAS-EDISON Calibration Date: 07/27/88
Contract No: _____

Minimum RF for SPCC is 0.05 Maximum % RSD for CCC is 30.0%

Compound	Laboratory ID: >B7386 >B7385 >B7387 - -					RRT	RF	% RSD	CCC	SPCC
	RF	RF	RF	RF	RF					
	10.00	25.00	40.00	60.00	80.00					
2,4,6-Trichlorophenol	.35799	.35528	.37124	-	-	.895	.36150	2.362	*	
2,4,5-Trichlorophenol	.38806	.38674	.37343	-	-	.899	.38274	2.114		
2-Chloronaphthalene	1.04475	.96060	1.03349	-	-	.917	1.01294	4.510		
2-Fluorobiphenyl (SURR)	1.08998	.89465	1.19427	-	-	.907	1.05963	14.354		
2-Nitroaniline	.50368	.55811	.45606	-	-	.939	.50595	16.093		
Dimethyl Phthalate	1.70089	1.80015	1.32725	-	-	.975	1.60943	15.494		
Acenaphthylene	1.92034	1.89801	1.82502	-	-	.976	1.88112	2.650		
3-Nitroaniline	.40165	.43603	.26883	-	-	.999	.36883	23.940		
Acenaphthene	1.31757	1.24488	1.16777	-	-	1.004	1.24341	6.025	*	
2,4-Dinitrophenol	.26961	.29151	.17516	-	-	1.013	.24543	25.192		**
4-Nitrophenol	.25081	.24139	.13436	-	-	1.028	.20885	30.970		**
Dibenzofuran	1.88182	1.79685	1.43140	-	-	1.027	1.70335	14.050		
2,4-Dinitrotoluene	.41582	.43941	.33438	-	-	.982	.39653	13.896		
2,6-Dinitrotoluene	.73695	.74317	.42124	-	-	1.036	.63379	29.048		
Diethylphthalate	1.84095	1.84838	1.14037	-	-	1.076	1.60990	25.259		
4-Chlorophenyl-phenylether	.79642	.74882	.58178	-	-	1.080	.70901	15.899		
Fluorene	1.68003	1.51774	1.12065	-	-	1.076	1.43948	19.993		
4-Nitroaniline	.43226	.39400	.22785	-	-	1.087	.35137	30.927		
4,6-Dinitro-2-methylphenol	.16397	.13363	.13108	-	-	.905	.14289	12.807		
N-Nitrosodiphenylamine	.46564	.47850	.47683	-	-	.909	.47366	1.477	*	
1,2-Diphenylhydrazine	.93394	.96071	1.17417	-	-	.912	1.02294	12.870		
2,4,6-Tribromophenol (SURR)	.14846	.14231	.18726	-	-	.921	.15934	15.298		
4-Bromophenyl-phenylether	.20105	.20359	.24477	-	-	.950	.21647	11.337		
Hexachlorobenzene	.31731	.28816	.33669	-	-	.965	.31405	7.779		
Pentachlorophenol	.19196	.14687	.16025	-	-	.987	.16636	13.919	*	
Phenanthrene	1.10036	1.04930	1.03269	-	-	1.003	1.06078	3.324		
Anthracene	1.14465	1.11100	1.00535	-	-	1.008	1.08708	6.687		
Di-n-Butylphthalate	1.11226	.75049	.84022	-	-	1.082	.90099	20.909		
Fluoranthene	.95308	.51640	.59869	-	-	1.143	.68939	33.658	*	
Benzidine	.34972	.02940	.21327	-	-	.884	.19747	81.404		

RF - Response Factor (Subscript is amount in UG/ML)

RRT - Average Relative Retention Time (RT Std/RT Istd)

RF - Average Response Factor

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Initial Calibration Data
HSL Compounds

Case No: _____ Instrument ID: UNIT #4
Contractor: ITAS-EDISON Calibration Date: 07/27/88
Contract No: _____

Minimum RF for SPCC is 0.05 Maximum % RSD for CCC is 30.0%

Compound	Laboratory ID: >B7386 >B7385 >B7387 - -					RRT	RF	% RSD	CCC	SPCC
	RF	RF	RF	RF	RF					
	10.00	25.00	40.00	60.00	80.00					
Pyrene	14.3552	8.85790	5.76335	-	-	.889	9.65883	45.053		
Terphenyl-d14 (SURR)	6.43119	3.29756	3.09466	-	-	.987	4.27447	43.760		
Butylbenzylphthalate	.75675	.56059	.61268	-	-	.957	.64334	15.794		
3,3'-Dichlorobenzidine	.21079	.20575	.18692	-	-	1.000	.20115	6.255		
Benzo(a)Anthracene	1.42646	1.11501	1.04175	-	-	.999	1.19441	17.103		
Bis(2-Ethylhexyl)Phthalate	.68132	.68312	.62046	-	-	1.013	.66163	5.391		
Chrysene	1.00457	.94321	.93444	-	-	1.002	.96074	3.977		
Di-n-octyl phthalate	1.65252	1.54210	1.80541	-	-	.958	1.66668	7.934	*	
Benzo(b)fluoranthene	1.97067	1.46574	2.08302	-	-	.973	1.83981	17.871		
Benzo(k)Fluoranthene	1.60160	1.45521	1.71388	-	-	.974	1.59023	8.157		
Benzo(a)Pyrene	1.65972	1.30362	1.43409	-	-	.996	1.46581	12.291	*	
Indeno(1,2,3-cd)Pyrene	1.59183	1.63823	1.47141	-	-	1.078	1.56715	5.494		
Dibenzo(a,h)Anthracene	1.37674	1.34212	1.24223	-	-	1.079	1.32036	5.290		
Benzo(g,h,i)Perylene	1.38787	1.38912	1.15736	-	-	1.099	1.31145	10.176		

RF - Response Factor (Subscript is amount in $\mu\text{G}/\text{ML}$)

RRT - Average Relative Retention Time (RT Std/RT Istd)

RF - Average Response Factor

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

CC0064

CALIBRATION STANDARDS DATE AND TIME SUMMARY
+ SURROGATE RETENTION TIME SHIFT EVALUATION
 (for all standards, blanks, samples, replicates and spikes)

LAB NAME : ITAS-EDISON

CONTRACT : ECRA

PROJECT NAME : Union Carbide DATE RECEIVED: 6-28-88

WORK ORDER # : E 807046-19

INSTRUMENT I.D. : HP5890 ANALYSIS I.D.: Pest/Ped/NeCB SURROGATE I.D.: PBC
PE SIGMA

GC COLUMN : 1.5% SP-2250/1.95%SP-2401 ON 100/120 SUPELCOPORT

STANDARD I.D. OR SAMPLE #	LAB SAMPLE I.D.	CALIBRATION		ANALYSIS DATE	ANALYSIS TIME	%D	*
		ini- tial	contin- uing				
A1232 250 µg/L				7-11-88	15:29:01	0	
A1232 500 µg/L				7-11-88	15:55:24	0	
A1232 1000 µg/L				7-11-88	16:21:45	0	
E807046-19	P5294S			7-11-88	12:44:25	0	
A1 B1 Pest MIX				7-14-88	9:35:48	0	
A2 B2 Pest MIX				7-14-88	22:24:03	0.14	
A3 B3 Pest MIX				7-14-88	22:49:22	0.09	
E807046-19	P3963W			7-14-88	17:58:12	0.09	
I:16 PH MIX							
I:9 PH MIX				7-15-88	15:47:09	0	
I:4 PH MIX							
E807046-19	H1296W			7-16-88	03:24:48	0	
E807078-02	H1290WMS			7-15-88	23:38	0	
Proc. BLANK spike	N1290WOMS			7-15-88	00:06	0	
E807078-02	H1290W			7-15-88	25:45:50	0	
A1 B1 Pest MIX	-			7-20-88	10:43:45	0	
A2 B2 Pest MIX	-			7-20-88	09:38:35	0.98	
A3 B3 Pest MIX	-			7-20-88	11:10:29	0	
Spike Procedure Blank	P3960W PMS			7-20-88	16:11:32	1.96	
A2 B2 Pest MIX	-			7-15-88	08:22:04	0	
Proc. BLANK	P3960WMS			7-15-88	10:00:06	0	
E807068-01	P3960WML			7-15-88	14:44:24	0.65	
A2 B2 Pest MIX	-			7-18-88	13:25:09	0	
E807068-01	P3960WMS			7-18-88	17:17:32	0.17	
A1016 250 µg/L	-			7-18-88	15:27:43	0	
A1016 500 µg/L	-			7-18-88	15:55:14	0.049	
A1016 1000 µg/L	-			7-18-88	16:22:43	0.64	
A1260 250 µg/L	-			7-11-88	09:35:05	0	
A1260 500 µg/L	-			7-11-88	10:02:36	0.25	
A1260 1000 µg/L	-			7-11-88	10:30:04	0.35	

* Values outside of QC limits (2.0 % for packed columns, 0.3% for capillary columns)

NOTE: %D = % difference from RT of surrogate in initial run .

CG0065

000066

REPLICATE SUMMARY

CG0067

Extract # 09293 Extraction Date: 7/8/88
 Analysis Analysis Date: 7/8/88 INTERNATIONAL TECHNOLOGY
 CORPORATION
 Sample: E806230-02

VOLATILE QC REPLICATE SAMPLE DATA

Compound Name	Sample Conc. $\mu\text{g/kg}$	Replicate Sample Conc. $\mu\text{g/kg}$	Difference	RPD(1) (%)
Methylene Chloride	ND	ND	0	—
1,1-Dichloroethylene				
1,1-Dichloroethane				
t-1,2-Dichloroethylene				
Chloroform		27	27	200
1,2-Dichloroethane		ND	0	
1,1,1-Trichloroethane				
Carbon Tetrachloride				
Bromodichloromethane				
1,2-dichloropropane				
t-1,3-Dichloropropylene				
Trichloroethylene				
Dibromochloromethane				
cis-1,3-Dichloropropylene				
1,1,2-Trichloroethane				
Benzene				
2-chloroethylvinylether				
Bromoform				
Tetrachloroethylene				
1,1,2,2-Tetrachloroethane				
Toluene				
Chlorobenzene				
Ethylbenzene				
Bromomethane				
Chloroethane				
Vinyl Chloride				
Trichlorofluoromethane				

Replicate Surrogate Recovery	Observed Conc, ppb	Theor. Conc, ppb	% Recovery	Acceptable		Acceptable	
				Aqueous Low	Range High	Soil Low	Range High
d4-1,2-Dichloroethane	53.4	50	107	76	114	70	121
d8-Toluene	47.8	50	96	88	110	81	117
Bromofluorobenzene	50	50	100	86	115	74	121

(1) RPD (relative percent difference) = $\frac{\text{Sample conc} - \text{Replicate conc}}{(\text{Sample conc} + \text{Rep. conc})/2} \times 100$

C00068

BASE/NEUTRAL QC REPLICATE SUMMARY

Compound Name	Sample Conc.	Rep. Conc.	Difference	RPD(1)
N-Nitrosodimethylamine	ND	ND	0	-
1,3-Dichlorobenzene				
Hexachloroethane				
1,2-Dichlorobenzene				
Bis(2-Chloroisopropyl)Ether				
N-nitrosodi-N-Propylamine				
Hexachlorobutadiene				
1,2,4-Trichlorobenzene				
Naphthalene				
Bis(2-Chloroethyl)Ether				
Hexachlorocyclopentadiene				
Nitrobenzene				
Bis(2-chloroethoxy)Methane				
2-Chloronaphthalene				
Acenaphthylene				
Acenaphthene				
Isophorone				
Fluorene				
4-Chloro-Phenyl Phenyl Ether				
2,6-Dinitrotoluene				
1,2-Diphenylhydrazine				
2,4-Dinitrotoluene				
N-Nitrosodiphenylamine				
Hexachlorobenzene				
4-Bromophenyl Phenyl Ether				
Phenanthrene				
Anthracene				
Dimethylphthalate				
Diethylphthalate				
Fluoranthene				
Pyrene				
Di-N-butylphthalate				
Benzidine				
Butyl Benzylphthalate				
Chrysene				
Bis(2-Ethylhexyl)Phthalate				
Benzo(a)Anthracene				
Di-N-Octyl Phthalate				
Benzo(b)Fluoranthene				
Benzo(k)Fluoranthene				
Benzo(a)Pyrene				
Indeno(1,2,3-cd)Pyrene				
Dibenzo(a,b)Anthracene				
Benzo(ghi)Perylene				
3,3'-Dichlorobenzidine				

Surrogate Recovery	Observed Conc	Theor. Conc	% Recovery	Acceptable Range Low	Recovery Aqueous High	Acceptable Range Low	Recovery Soil High
d5 - Nitrobenzene	520	3240	17	35	114	23	120
2-Fluorobiphenyl	805	↓	35	43	116	30	115
Terphenyl-d14	689	↓	31	33	141	18	137

(1) RPD (Relative Percent Difference) = $\frac{\text{Sample conc.} - \text{Replicate conc.}}{(\text{Sample conc.} + \text{Rep. conc.})/2} \times 100$

000069

QUALITY ASSURANCE DATA FORM

CLIENT Union Carbide

DATE REC'D 6-28-88

ANALYSIS REQUESTED: Pest. only

PCB only Pest/PCB ✓ H₂O

NOTES: NOT ORIGINALLY ANALYZED FOR ECRA QC Data used from analysis (Aqueous samples)		QC REPLICATE ANALYSIS			FIELD/TRIP BLANK ANALYSIS	METHOD BLANK ANALYSIS
		Sample ID: <u>P3960</u> <u>E807068-01</u> <u>P3960</u> <u>P39</u>				<u>P3960WPB</u> <u>43</u>
Parameter	MDL ¹ ()	Sample Conc. (ug/L)	Rep. Conc. (ug/L)	RPD ²	Conc. ()	Conc. (ug/L)
1. alpha-BHC		< 20	< 2.0			< 0.2
2. gamma-BHC						
3. Beta-BHC						
4. Heptachlor						
5. delta-BHC						
6. Aldrin						
7. Heptachlor Epoxide						
8. Endosulfan I						
9. p,p'-DDE						
10. Dieldrin						
11. Endrin						
12. P,p'-DDD						
13. Endosulfan II						
14. P,p'-DDT						
15. Endrin Aldehyde						< 0.2
16. Endosulfan Sulfate		< 20	< 2			
17. Chlordane						
18. Toxaphene						
19. PCB-1016		< 20	< 20			< 5
20. PCB-1221						
21. PCB-1232						
22. PCB-1242						
23. PCB-1248						
24. PCB-1254						
25. PCB-1260		< 20	< 20			< 5
26. Methoxychlor						

¹MDL = Minimum detection limit.

²RPD = Relative percent difference.

QUALITY ASSURANCE DATA FORM

CLIENT Union Carbide

DATE REC'D 6-28-88

ANALYSIS REQUESTED: Pest. only

PCB only ✓

Pest/PCB

NOTES: <u>Soil Matrix</u>		QC REPLICATE ANALYSIS			FIELD/TRIP BLANK ANALYSIS	METHOD BLANK ANALYSIS
<u>Not originally analyzed for ECRA</u> OC Contaminant		Sample ID:				
		XXXXXX E807008-01 P52953 P5295 SMR				P5295SPb
Parameter	MDL ¹ (mg/kg)	Sample Conc. (mg/kg)	Rep. Conc. (mg/kg)	RPD ²	Conc. ()	Conc. (mg/kg)
1. alpha-BHC						
2. gamma-BHC						
3. Beta-BHC						
4. Heptachlor						
5. delta-BHC						
6. Aldrin						
7. Heptachlor Epoxide						
8. Endosulfan I						
9. p,p'-DDE						
10. Dieldrin						
11. Endrin						
12. P,P'-DDD						
13. Endosulfan II						
14. P,P'-DDT						
15. Endrin Aldehyde						
16. Endosulfan Sulfate						
17. Chlordane						
18. Toxaphene						
19. PCB-1016	<1.0 mg/kg	<1.0	<1.0	0		<1.0
20. PCB-1221	↓	↓	↓	↓		↓
21. PCB-1232						
22. PCB-1242						
23. PCB-1248						
24. PCB-1254						
25. PCB-1260						
26. Methoxychlor						

¹MDL = Minimum detection limit.

²RPD = Relative percent difference.

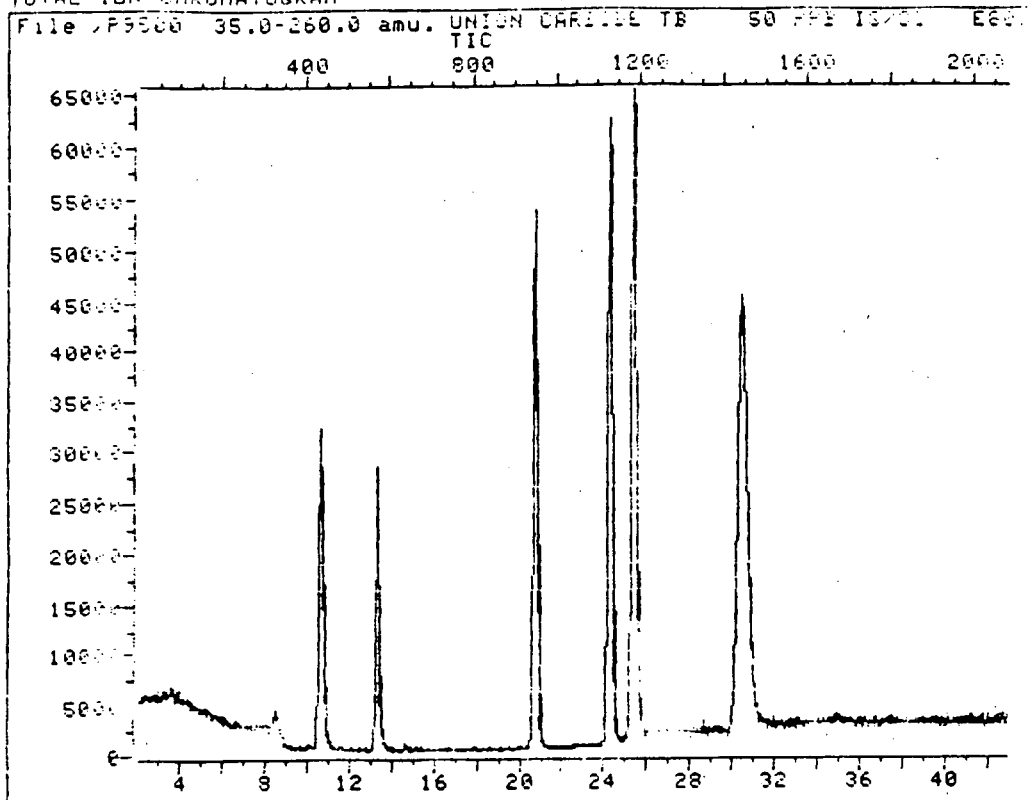
SAMPLE CHROMATOGRAMS

000072

VOLATILE ORGANICS

000073

TOTAL ION CHROMATOGRAM



Data File: >PP900::AA

Quant Output File: >PP900::EE

Name: UNION CARBIDE TB

Misc: 50 PPB IS/SS E88048-18A

5ML

SP

ID File: IDU01::DD

Title: HSL VOLATILE ORGANICS

Last Calibration: 880719 18:57

Operator ID: USER3

Quant Time: 880721 20:47

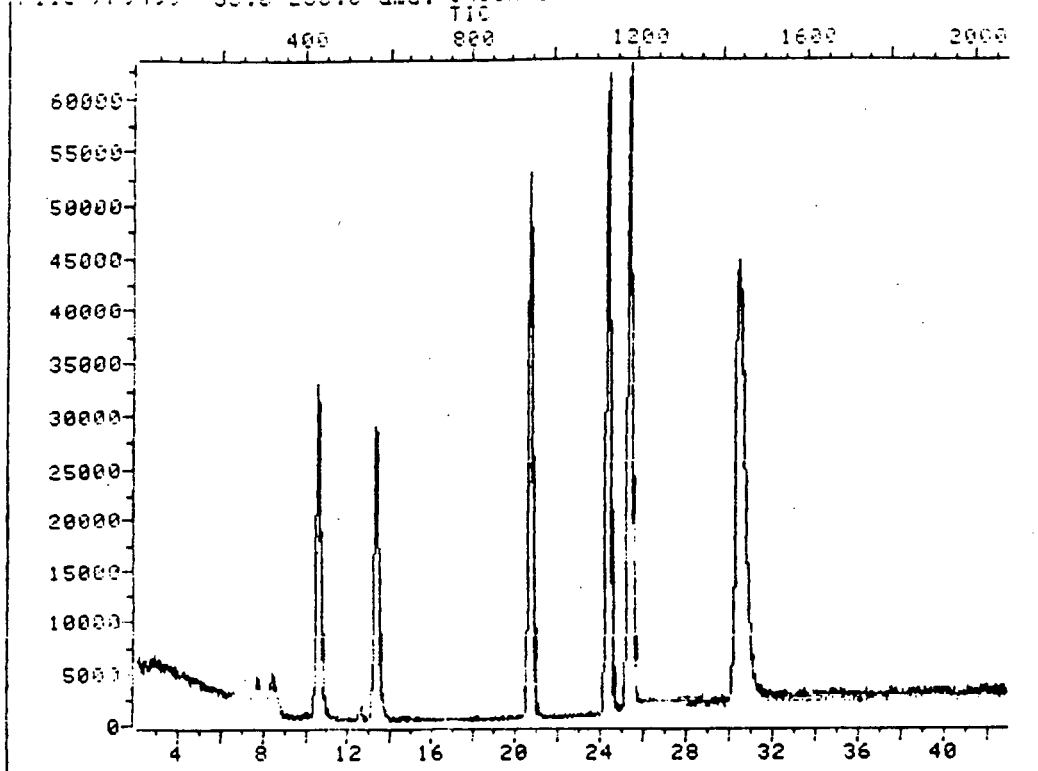
Injected at: 880721 20:05

P. mypore

C00074

TOTAL ION CHROMATOGRAM

File: P9495 35.3-150.0 and. UNION CARBIDE SOIL 50 PPB IS/SS E801



Data File: >P9499::AA

Quant Output File: >P9499::EE

Name: UNION CARBIDE SOIL

Misc: 50 PPB IS/SS E8 7048-19AS 1G.TML

SF

Id File: IDU01::DD

Title: HSL VOLATILE ORGANICS

Last Calibration: 880719 18:57

Operator ID: USE93

Quant Time: 880721 20:00

Injected at: 880721 19:16

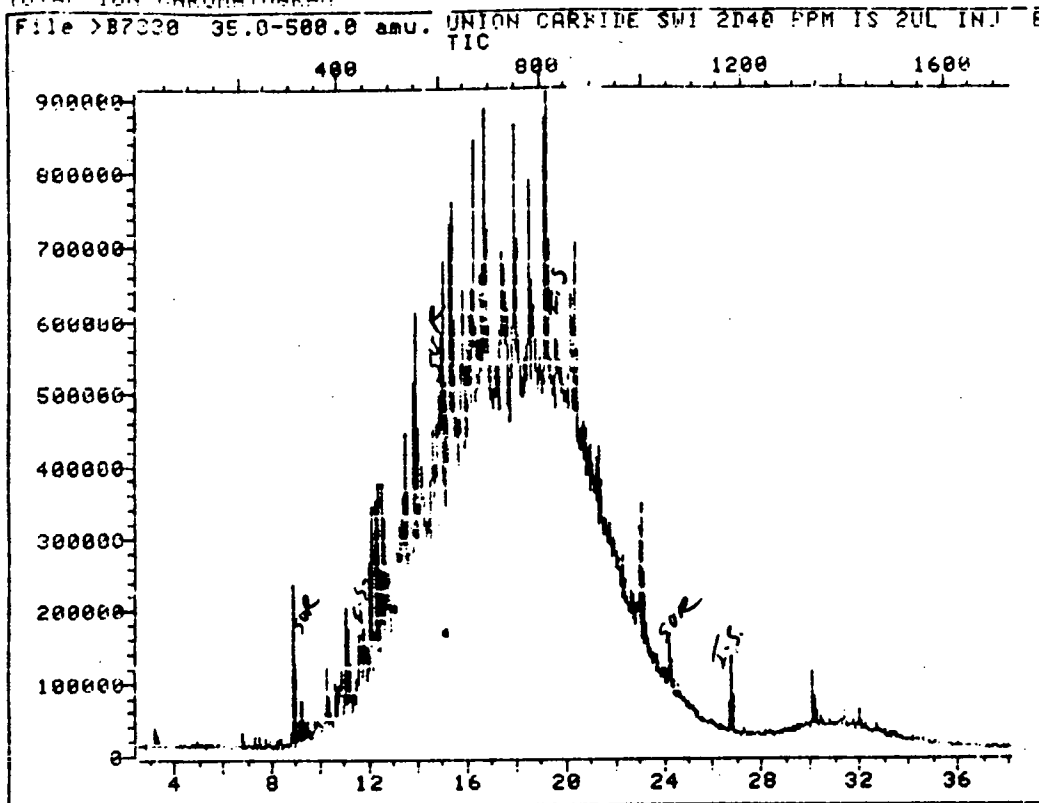
P. Mysore
G. Martin

000075

SEMI-VOLATILE ORGANICS

000076

TOTAL ION CHROMATOGRAM



Data File: >B7330::S3

Quant Output File: ^B7330::DD

Name: UNION CARBIDE SW1 2D

Misc: 40 PPM IS 2UL INJ E807046 01AS B2283S

Id File: BAB3::DD

Title: BASE NEUTRAL COMPOUNDS

Last Calibration: 880720 20:46

Operator ID: USER5

Quant Time: 880721 11:25

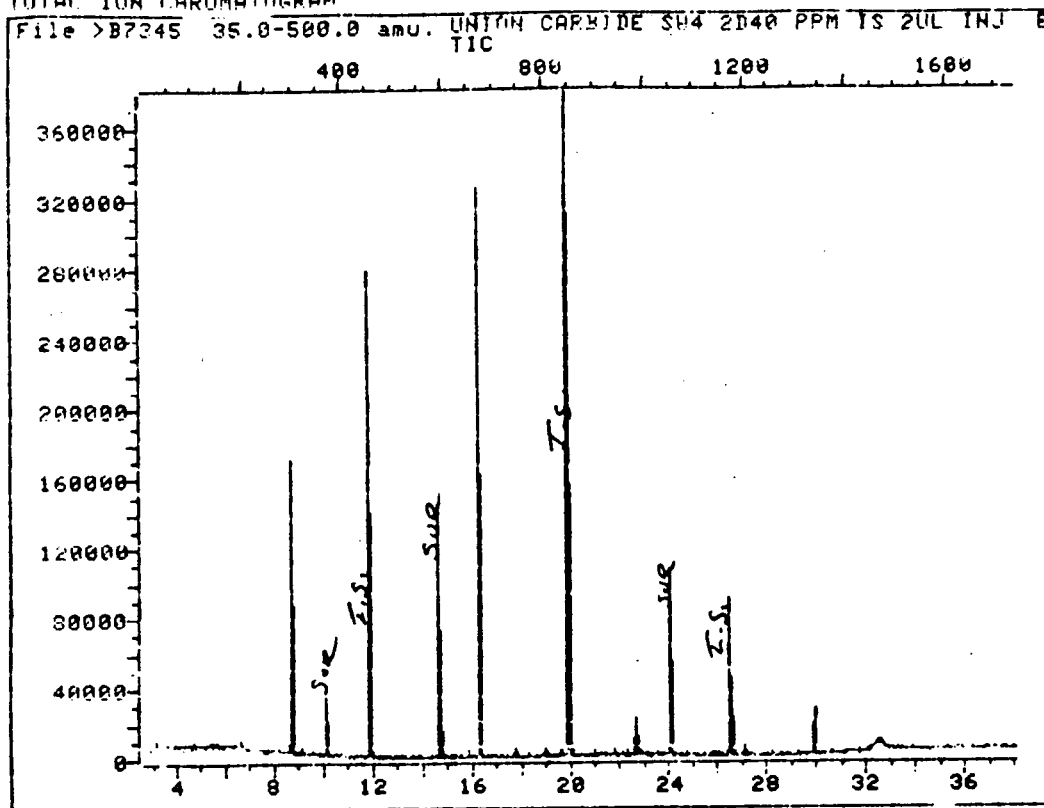
Injected at: 880721 10:41

Edward Majeski

8-8-88

000077

TOTAL ION CHROMATOGRAM



Data File: >B7345::S3

Quant Output File: ^B7345::DD

Name: UNION CARBIDE SW4 2D

Misc: 40 PPM IS 2UL INJ E807046 04AS B2285S

Id File: EAB3::DD

Title: BASE NEUTRAL COMPOUNDS

Last Calibration: 880721 20:34

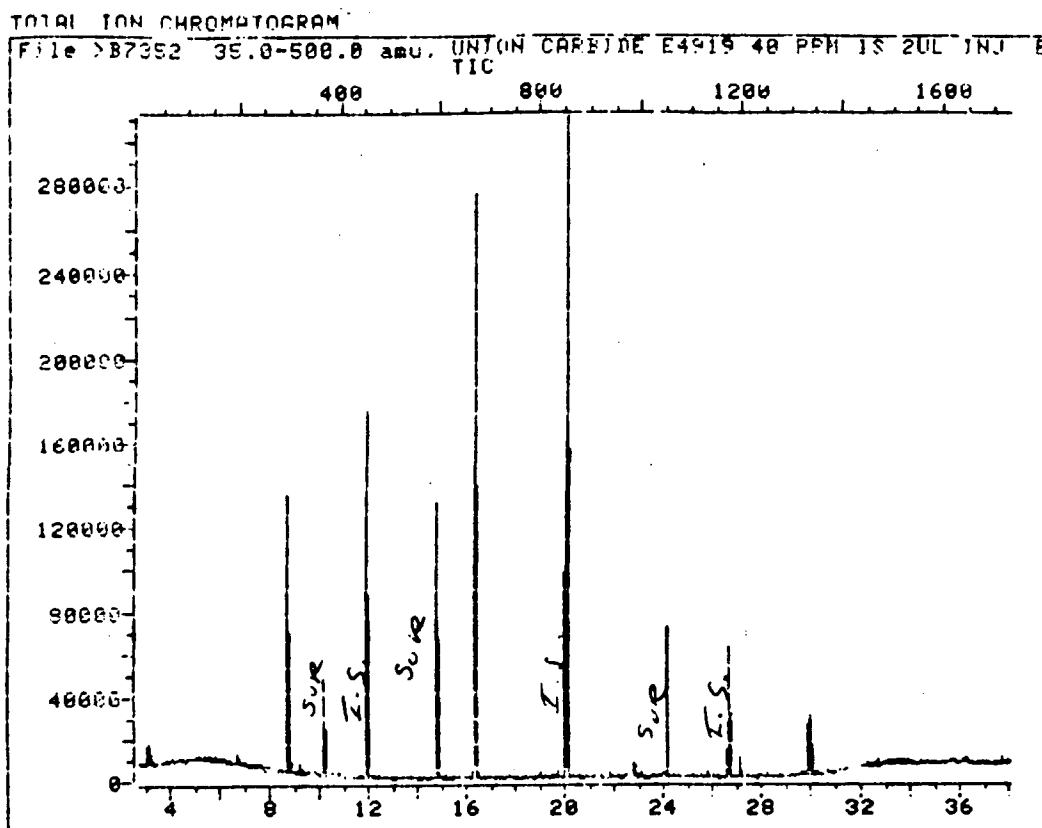
Operator ID: USER5

Quant Time: 880722 10:06

Injected at: 880722 09:17

Edward Mujica
8-8-85

000078



Data File: >B7352::BB

Quant Output File: ^B7352::DD

Name: UNION CARBIDE E4919

Misc: 40 PPM IS 2UL INJ E807046 07AS B2286S 2D

Id File: BAB3::DD

Title: BASE NEUTRAL COMPOUNDS

Last Calibration: 880721 20:34

Operator ID: USER6

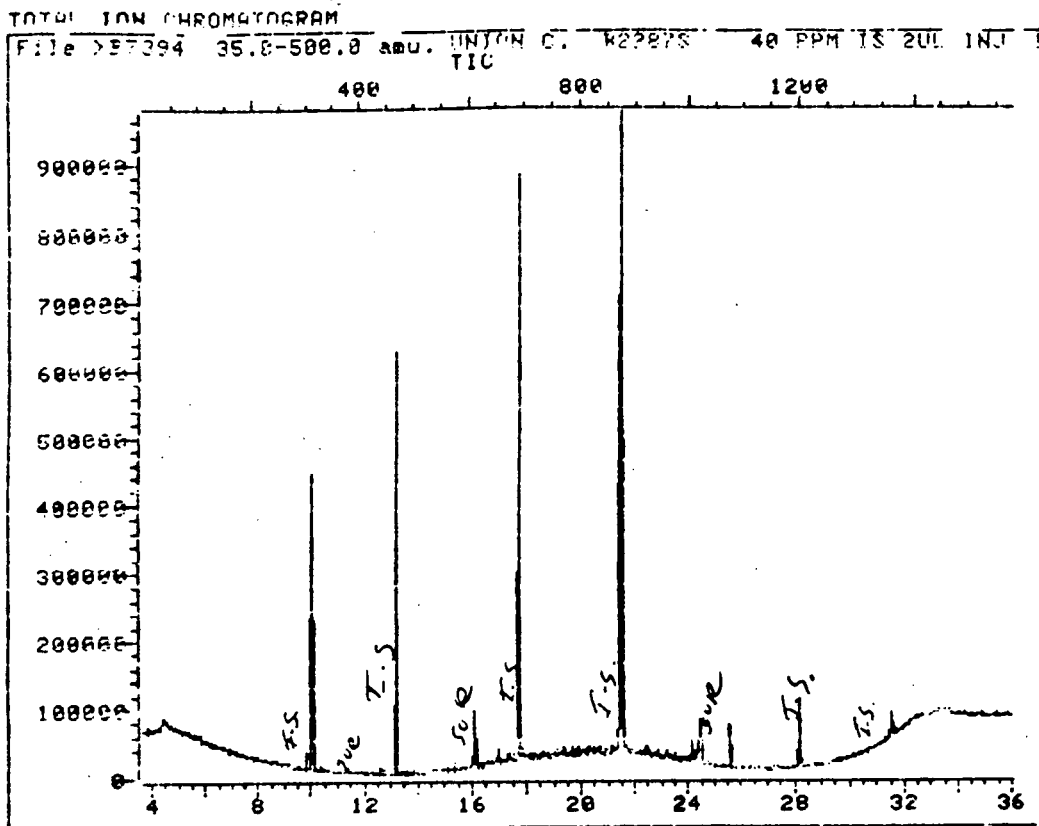
Quant Time: 880722 17:18

Injected at: 880722 16:36

Edward Majeski

8-9-88

C00079



Data File: >B7394:163

Quant Output File: ^B7394:1EE

Name: UNION C. B2287S

Misc: 40 PPM IS 2UL INJ E807046-11AS UNION CARBIDE

Id File: MBAS:IME

Title: IT EDISON - HSL/PRIORITY POLLUTANT SEMI-VOLATILE ORGANICS

Last Calibration: 880727 21:49

Operator ID: USER4

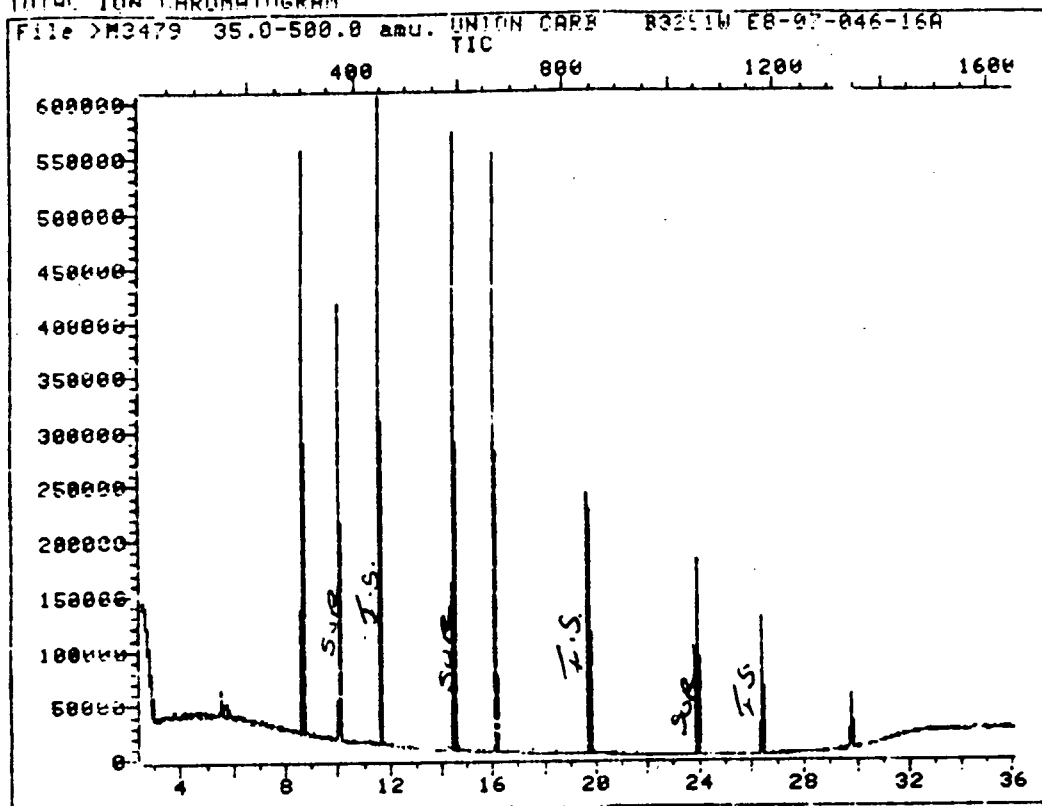
Quant Time: 880801 09:20

Injected at: 880728 12:24

Edward Majer
8-9-88

000080

TOTAL ION CHROMATOGRAM



Data File: >M3479

Quant Output File: ^M3479::CC

Name: UNION CARB B3251W

Misc: E8-07-046-16A 2D

SW

BTL# 4

Id File: BAB2::DD

Title: BASE NEUTRAL COMPOUNDS

Last Calibration: 880720 11:52

Operator ID: USERS

Quant Time: 880721 11:08

Injected at: 880720 18:59

Edward Mojzski
8-1-88

000081

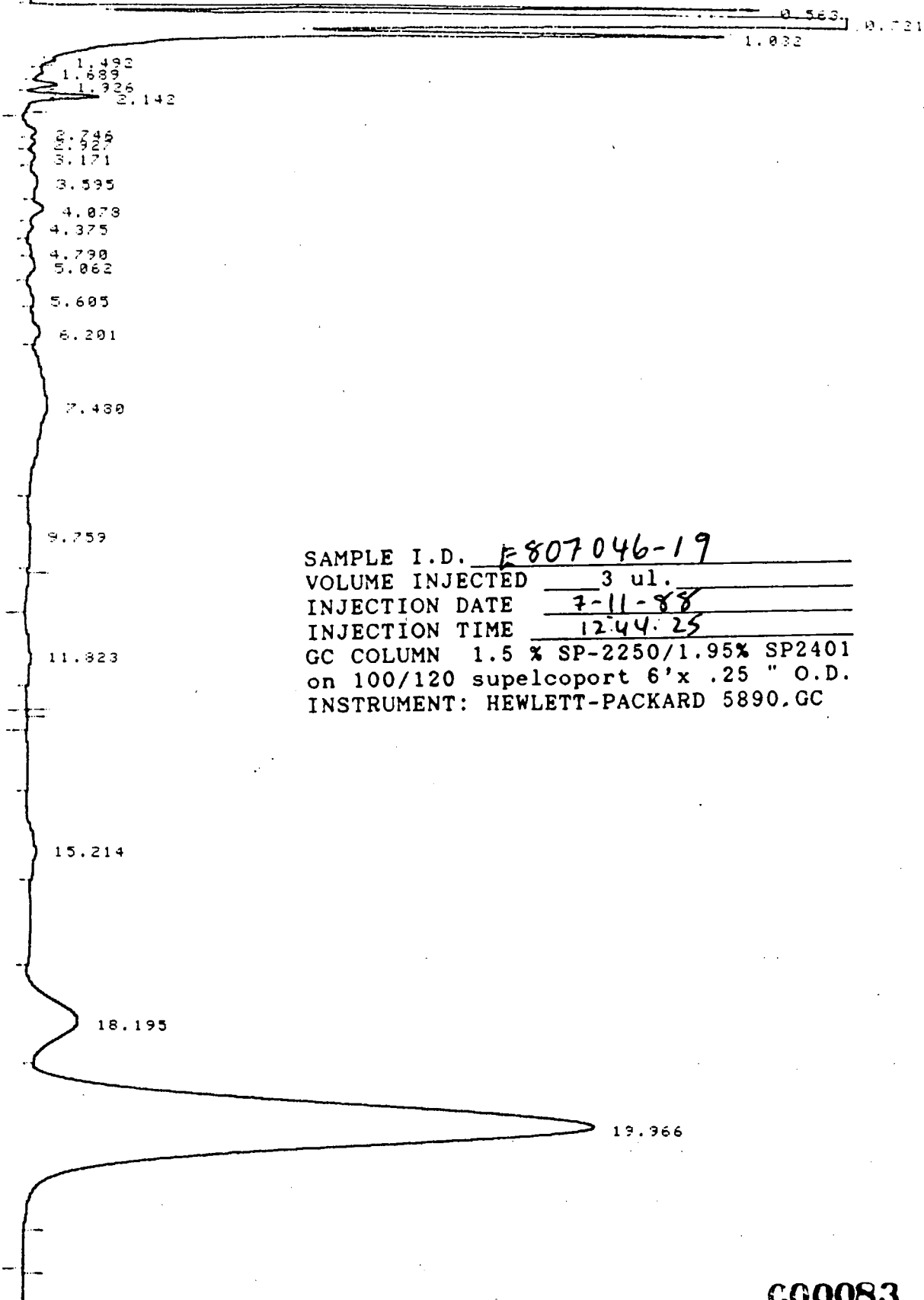
PCBS/PESTICIDES

000082

* RUN # 100 JUL 11, 1968 12:44:25
START

IF

UnionC- P52945



SAMPLE I.D. E807046-19
VOLUME INJECTED 3 ul.
INJECTION DATE 7-11-88
INJECTION TIME 12:44:25
GC COLUMN 1.5 % SP-2250/1.95% SP2401
on 100/120 supelcoport 6'x .25 " O.D.
INSTRUMENT: HEWLETT-PACKARD 5890.GC

C00083

TIMETABLE STOP

RUN# 100 JUL 11 1968 12:44:25

SAMPLE NAME: SP2250/2401 SAMPLE# 58
PEST PCB HP5890B

RT	AREA	TYPE	WIDTH	AREA
.563	338523	PH	.052	2.64908
.721	853647	SHB	.097	51.07224
1.032	245441	TBB	.072	2.31194
1.936	23522	TPB	.066	.17624
2.142	56969	BB	.103	.52406
2.746	21586	BV	.173	.16892
2.927	17343	VV	.155	.13572
3.171	23113	VV	.212	.18087
3.595	57560	VV	.447	.45059
4.078	45246	VV	.250	.35407
4.375	16314	VV	.214	.12766
4.790	13953	VV	.215	.10919
5.062	29843	VV	.296	.20353
5.605	22870	VV	.339	.17897
6.201	59000	VV	.420	.46170
7.480	283740	VV	1.482	2.22038
9.759	15744	VV	.833	.12320
11.823	26509	BV	.636	.20744
15.214	67396	VV	.779	.53131
18.195	377916	VV	.789	2.95734
19.966	4450330	VB	.875	34.82557

TOTAL AREA=1.2779E+07
MUL FACTOR=1.0000E+00

*
*
*

000084

CHAIN OF CUSTODY RECORDS

000085



REQUEST FOR ANALYSIS

R/A Control No. 0000.1
C/C Control No. A 100888
#7-88
I.T. Edison

PROJECT NAME Union Carbide - Linden
PROJECT NUMBER 305281
PROJECT MANAGER Tom Herson
BILL TO _____
PURCHASE ORDER NO. _____

DATE SAMPLES SHIPPED _____
LAB DESTINATION _____
LABORATORY CONTACT _____
SEND LAB REPORT TO _____

DATE REPORT REQUIRED _____
PROJECT CONTACT _____
PROJECT CONTACT PHONE NO. _____

Sample No.	Sample Type	Sample Volume	Preservative	Requested Testing Program	Special Instructions
E4919	SOIL	80Z	NO	BN+15 TPHC and BN+15	
E4920	"	"	↓	↓	
E4921	"	"			
E4922	"	"			
E4923	"	"			and BN+15
E4924	"	"			
E4925	"	"			
E4926	"	"			
E4927	"	"			

TURNAROUND TIME REQUIRED: (Rush must be approved by the Project Manager.)

Normal _____

Rush ☒ _____

on TPHC only
(Subject to rush surcharge)

BN+15 on
4923 + 4913 only.

POSSIBLE HAZARD IDENTIFICATION: (Please indicate if sample(s) are hazardous materials and/or suspected to contain high levels of hazardous substances)

Nonhazardous _____

Flammable _____

Skin Irritant _____

Highly Toxic _____

Other _____

(Please Specify)

SAMPLE DISPOSAL: (Please indicate disposition of sample following analysis. Lab will charge for packing, shipping, and disposal.)

Return to Client _____

Disposal by Lab _____

FOR LAB USE ONLY

Received By _____

Date/Time _____

WHITE - Original, to accompany samples
YELLOW - Field copy



REQUEST FOR ANALYSIS

R/A Control No. 005558
C/C Control No. A100849
7-7-88
I.T. Edison
Tom Hernan
Jacques Hill

PROJECT NAME Union Carbide - Linden
PROJECT NUMBER 305281
PROJECT MANAGER Tom Hernan
BILL TO _____
PURCHASE ORDER NO. _____

DATE SAMPLES SHIPPED _____
LAB DESTINATION _____
LABORATORY CONTACT _____
SEND LAB REPORT TO _____
DATE REPORT REQUIRED _____
PROJECT CONTACT _____
PROJECT CONTACT PHONE NO. _____

Sample No.	Sample Type	Sample Volume	Preservative	Requested Testing Program	Special Instructions
E4913	SOIL	80z	NO	TPHC + BN+15	
E4914	"	80z	/	" NO	
E4915	"	80z		" NO	
E4916	"	80z		" BN+15	
E4917	"	80z		" NO	
E4918	"	80z		" NO	
E4914928	"	160z		Disposal Analysis	
E49204930	" WATER	500ml		BN+15	
E49214931	WATER	1 qt.		TPHC	
E49224932	WATER			VO's	

TURNAROUND TIME REQUIRED: (Rush must be approved by the Project Manager.)
Normal _____ Rush ☒ on TPHC only
(Subject to rush surcharge)

BN+15 m 4913 + 4916 only.

POSSIBLE HAZARD IDENTIFICATION: (Please indicate if sample(s) are hazardous materials and/or suspected to contain high levels of hazardous substances)

Nonhazardous _____ Flammable _____ Skin Irritant _____ Highly Toxic _____ Other _____
(Please Specify)

SAMPLE DISPOSAL: (Please indicate disposition of sample following analysis. Lab will charge for packing, shipping, and disposal.)

Return to Client _____ Disposal by Lab _____

FOR LAB USE ONLY

Received By _____ Date/Time _____

WHITE - Original, to accompany samples
YELLOW - Field copy

PRAXAIR, INC.

INTERNAL CORRESPONDENCE

INDUSTRIAL AVENUE, KEASBEY, NJ 08832

DATE: June 26, 1995

MEMO TO: E. Durkin
J. J. Sibley
R. G. Tisch

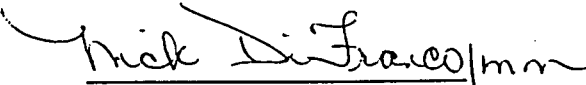
COPY TO: W. E. Grunert
Mike Lutz
Ray Seiwert

SUBJECT: Linden, NJ

The ISRA remediation project for the Linden, NJ leased property is now complete. On June 23, 1995 I received the attached letter of approval of the Negative Declaration Affidavit.

The New Jersey DEP has initiated internal procedures to release any Remediation Funding Source held for the administration Consent Order of May 25, 1993. This is merely an administrative measure since Praxair financial assurance is in the form of a self guarantee.

Copies of the Negative Declaration Affidavit approval have been sent to LCP Chemicals, the property owner. I have been advised by Suzanne Blanchard, our external counsel in this case, that any new developments related to this property are now the responsibility of LCP, the property owner.


N. A. DiFranco

NAD:mm
enclosure



State of New Jersey

Christine Todd Whitman
Governor

Department of Environmental Protection

Robert C. Shinn, Jr.
Commissioner

JUN 20 1995

N. A. DiFranco
Praxair Inc.
Industrial Ave., Box 237
Keasbey, NJ 08832

RE: Industrial Establishment: Linde Gases of the Mid-Atlantic Inc.
Location: S. Wood Ave., Linden City, Union County
Block: 00587 Lot: 00003 (Leasehold only)
ISRA Case # 90367
Transaction: Sale of Business, Cessation of Operations
Negative Declaration Affidavit by operator dated March 27, 1995

Dear Mr. DiFranco:

Pursuant to the authority vested in the Commissioner of the New Jersey Department of Environmental Protection (NJDEP) by the Industrial Site Recovery Act (ISRA), formerly known as the Environmental Cleanup Responsibility Act (ECRA), (N.J.S.A. 13:1K-6 et seq.) and duly delegated to the Assistant Director of the Industrial Site Evaluation Element pursuant to N.J.S.A. 13:1B-4, the referenced Negative Declaration Affidavit is hereby approved. This approval is based upon information provided in your Initial Notice as well as NJDEP review of the site.

Please be advised that areas exist which contain contaminant concentrations above current NJDEP residential direct contact soil cleanup criteria. Therefore, site use is being restricted. Appropriate institutional controls and engineering controls are currently in place, including, but not limited to, a Declaration of Environmental Restrictions, which has been recorded pursuant to N.J.S.A. 58:10B-13.

This No Further Action letter is for the leasehold portion of the property only. This does not apply to the elevated metals contamination found during background sampling which may be due to historical fill materials.

This notice will serve to release the Remediation Funding Source to Praxair Inc. for the Administrative Consent Order signed on May 25, 1993 and any other funds held pending compliance with ISRA.


This approval shall be limited to the above referenced transaction only and shall not restrict or prohibit the NJDEP or any other agency from taking regulatory

RECEIVED

JUN 23 1995

action under any other statute, rule or regulation. By issuing this No Further Action letter, NJDEP continues to reserve all rights to pursue any penalties allowable under the law for violations of the ISRA statute or ECRA regulations associated with this transaction.

Sincerely,



Wayne C. Howitz, Assistant Director
Industrial Site Evaluation Element

c: Henry F. Gavan, Linden Board of Health
301 North Wood Ave.
Linden, NJ 07036
Brian Sogorka, BEERA (was Debbie Bessen)
Beverly Phillips, BGWPA
BAC, Registration number 0054146
Tina Layre, BAC
Suzanne E. Blanchard, Cohen, Shapiro, Polisher, Shiekman and Cohen
Princeton Pike Corporate Center
1009 Lenox Drive - Building Four
Lawrenceville, NJ 08648
Randall W. Hansen, LCP Chemicals New Jersey
P. O. Box 484
Linden, NJ 07036

April 10, 1995

Joseph Goliszewski, Case Manager
New Jersey Department of Environmental
Protection and Energy
Division of Responsible Party Site Remediation
Bureau of Environmental and Cleanup
Responsibility Assessment
CN 028
Trenton, New Jersey 08625-0028

RE: Linde Gases of The Mid-Atlantic, Inc. Linden Facility ISRA Case No. 90367

Dear Mr. Goliszewski:

As required pursuant to Section 36 of the Industrial Site Recovery Act, enclosed is a copy of the Declaration of Environmental Restrictions which has been recorded with the Union County Register and acknowledged by the City of Linden.

Also enclosed is an executed Negative Declaration Affidavit accompanied by a check in the amount of \$500 for the Negative Declaration Processing Fee. Praxair appreciates your prompt attention to this matter.

Very truly yours,

N. A. DiFranco
Manager, Environmental Affairs

ND:mm
Enclosure
cc: Suzanne E. Blanchard, Esquire

INDUSTRIAL SITE RECOVERY ACT
NEGATIVE DECLARATION AFFIDAVIT

I. Industrial
Establishment: Linde Gases of the Mid Atlantic Inc.

Facility
Address: Foot of South Wood Avenue

Municipality: Linden

County: Union

Tax Block (s): 00587

Tax Lot(s): 00003

ISRA Case No.: 90367

ISRA Trigger: Termination of Lease, and spinoff of
Praxair Inc. from Union Carbide Co.

Seller(s): N/A

Buyer(s): N/A

2. I John R. Crane, as Manager
(Name) (Business Entity Affiliation/Title)
of the above industrial establishment, have specific knowledge of
the operations of Linde Gases of the Mid Atlantic and
(Industrial Establishment)

3. hereby state that:

 a. there have been no discharge(s) of hazardous
substances or hazardous wastes from the
industrial establishment, as verified by the
completion of a Preliminary Assessment and, if
required, a Site Investigation, that require
remediation per N.J.A.C. 7:26E (Technical
Requirements for Site Remediation)

or

X b. any discharge(s) of hazardous substances or
hazardous wastes on or from the industrial
establishment have been remediated in accordance
with N.J.A.C. 7.26E (Technical Requirements for
Site Remediation) and approved by the Department.

TWO-PART CERTIFICATIONS

PART A

I certify under penalty of law that the information provided in this document is true, accurate and complete. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement which I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of N.J.S.A. 13:1K-6 et seq., I am personally liable for the penalties set forth at N.J.S.A. 13:1K-13.

Printed Name John R. Crane

Title Manager

Signature *John R. Crane*

Date 3-27-95

Sworn and Subscribed Before Me
on this 27th

Date of March 19 95

Alan M. Duva

Notary ALAN M. DUVA
NOTARY PUBLIC OF NEW JERSEY
My Commission Expires Dec. 23, 1996

PART B

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement which I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of N.J.S.A. 13:1K-6 et seq., I am personally liable for the penalties set forth at N.J.S.A. 13:1K-13.

Printed Name W.M. Therrien

Title Vice President

Signature *W.M. Therrien*

Date March 23, 1995

Sworn and Subscribed Before Me
on this 23rd

Date of March 19 95

Noreen E. Balla

Notary

NOREEN E. BALLA
Notary Public, State of New York
Qualified in Erie County
My Commission Expires May 6, 1995

INTERNAL MEMORANDUM

Sent to: DIFRANCO, NICK

Div/Dept: PRAXAIR-PLANT

Location: KEASBEY, NJ

Phone No.: (732) 738-1200

Fax No.: (732) 738-4011

From: VERMONT RECORDS CENTER

LaPorte Road, P.O. Box 489

Morrisville, VT 05661-0489

(802) 888-3174

(802) 888-5770 *FAX*

Date of Request: 03/16/98

Request Number: 39085

RTM Date: 01/22/96

Row/Stk/Loc: 021-05-22

Description of Request: ENTIRE CARTON #2, RTM 1/22/96

Request filled by: _____

Lisa May

INDUSTRIAL SITE RECOVERY ACT
NEGATIVE DECLARATION AFFIDAVIT

I. Industrial
Establishment: Linde Gases of the Mid Atlantic Inc.

Facility
Address: Foot of South Wood Avenue

Municipality: Linden

County: Union

Tax Block (s): 00587

Tax Lot(s): 00003

ISRA Case No.: 90367

ISRA Trigger: Termination of Lease, and spinoff of
Praxair Inc. from Union Carbide Co.

Seller(s): N/A

Buyer(s): N/A

2. I John R. Crane, as Manager
(Name) (Business Entity Affiliation/Title)
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(Industrial Establishment)

3. hereby state that:

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industrial establishment, as verified by the
completion of a Preliminary Assessment and, if
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remediation per N.J.A.C. 7:26E (Technical
Requirements for Site Remediation)

or

 X b. any discharge(s) of hazardous substances or
hazardous wastes on or from the industrial
establishment have been remediated in accordance
with N.J.A.C. 7.26E (Technical Requirements for
Site Remediation) and approved by the Department.

TWO-PART CERTIFICATIONS

PART A

I certify under penalty of law that the information provided in this document is true, accurate and complete. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement which I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of N.J.S.A. 13:1K-6 et seq., I am personally liable for the penalties set forth at N.J.S.A. 13:1K-13.

Printed Name John R. Crane

Title Manager

Signature [Signature]

Date 6-7-94

Sworn and Subscribed Before Me
on this 7th

Date of June 19 94

[Signature]

Notary

PART B

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement which I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of N.J.S.A. 13:1K-6 et seq., I am personally liable for the penalties set forth at N.J.S.A. 13:1K-13.

Printed Name W. M. Therrien

Title Vice President

Signature [Signature]

Date June 14, 1994

Sworn and Subscribed Before Me
on this 14th

Date of June 19 94

[Signature]

Notary

NOREEN E. BALLA
Notary Public, State of New York
Qualified in Erie County
My Commission Expires May 6, 1995



SOMERSET - UNION SOIL CONSERVATION DISTRICT

Somerset County 4-H Center, 308 Milltown Road

Bridgewater, New Jersey 08807

Telephone (908) 526-2701

RECEIVED
MAY 31 1994

FINAL REPORT OF COMPLIANCE

The requirements for permanent soil erosion and sediment control measures have been met at the following site in accordance with the N. J. Soil Erosion and Sediment Control Act, Chapter 251, P.L. 1975:

Project Name PRAXAIR LINDE Index 3U-30-4720

Block	Lot	Address
<u>587</u>	<u>3</u>	<u>SOUTH WOOD AVE</u>
Block	Lot	Address
Block	Lot	Address
Block	Lot	Address
Block	Lot	Address
Block	Lot	Address
Block	Lot	Address
Block	Lot	Address
Block	Lot	Address
Block	Lot	Address

Municipality LINDEN

William H. Lazkowski
District Official

5-26-94
Date

THIS APPROVAL IS SUBJECT TO
MUNICIPAL ENGINEER'S GRADING
PLAN AND DRAINAGE APPROVAL.

Distribution:
original - building inspector, T. Caverly
yellow - file
pink - owner or builder, Praxair Linde Division

SUSCD-29 (Rev.1/88)

DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS SUBSTANCES REGULATION

HAZARDOUS WASTE MANIFEST

P.O. Box 12820, Albany, New York 12212

Please print or type. Do not Staple.

Form Approved. OMB No. 2050-0039. Expires 3-30-94

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA No. E J D 0 1 1 3 9 2 7 3 3		Manifest Document No.		2. Page 1 of 1		Information in the shaded areas is not required by Federal Law.	
3. Generator's Name and Mailing Address PROKAR INC. FOOT OF SOUTH WOOD AVE LINDEN, NJ 07036						A. State Manifest Document No. NY B 513595 5			
4. Generator's Phone (201) 862-2422						B. Generator's ID TL 87965			
5. Transporter 1 (Company Name) BONWITH TRUCKS INC.						C. State Transporter's ID TL 87965			
6. US EPA ID Number EAD 146714878						D. Transporter's Phone (212) 261-2220			
7. Transporter 2 (Company Name)						E. State Transporter's ID			
8. US EPA ID Number						F. Transporter's Phone			
9. Designated Facility Name and Site Address CEM CHEMICAL SERVICES, INC. 1350 BALMER RD. ROSELAND, NJ 07068						G. State Facility's ID			
10. US EPA ID Number EYD 040836679						H. Facility's Phone (716) 754-3231			
11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)						12. Containers		13. Total Quantity	
a. EQ. HAZARDOUS WASTE, SOLID, H.O.S., 9, HAZ077, III, (D007, D008), (LEAD, CHROMIUM)						No. Type 001 BT		Unit 218 cwt. T	
b.								EPA Waste No. STATE	
c.								EPA Waste No. STATE	
d.								EPA Waste No. STATE	
J. Additional Descriptions for Materials Listed Above A. SOIL 1001, LEAD 9.2 PPM, CHROMIUM 9.3 PPM, 3						K. Handling Codes for Wastes Listed Above			
a.						a.			
b.						b.			
15. Special Handling Instructions and Additional Information CEM EMERGENCY RESPONSE INFORMATION (800) 745-8713 PROFILE ADG020 REG #31						88731-3 81413105			
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and state laws and regulations. If I am a large quantity generator, I certify that I have program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR if I am a small generator, I have made a good faith effort to minimize my waste and select the best waste management method that is available to me and that I can afford.									
Printed/Typed Name Dave Nicholson					Signature D. Nicholson				
17. Transporter 1 (Acknowledgement of Receipt of Materials)					Mo. Day Year 03/17/94				
Printed/Typed Name Raymond S Bear					Signature Raymond S Bear				
18. Transporter 2 (Acknowledgement or Receipt of Materials)					Mo. Day Year 03/17/94				
Printed/Typed Name					Signature				
19. Discrepancy Indication Space GEN. OMITTED DOCUMENT NO. ITEM E-SAME, ITEM C-ADD actual rec'd 46140P ITEM K-LD (PA)									
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.									
Printed/Typed Name EILEEN CARTER					Signature Eileen Carter				
					Mo. Day Year 03/18/94				

DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS SUBSTANCES REGULATION

HAZARDOUS WASTE MANIFEST

P.O. Box 12820, Albany, New York 12212

Form Approved. OMB No. 2050-0033. Expires 9-30-94

Please print or type. Do not Staple.

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA No. N J D 0 1 1 3 9 2 7 3 5		Manifest Document No. 42112		2. Page 1 of 1		Information in the shaded areas is not required by Federal Law.			
3. Generator's Name and Mailing Address PRAYAN INC EAST OF SOUTH WOOD AVE LINDEN, NJ 07036						A. State Manifest Document No. NY B 513866 7					
4. Generator's Phone (201) 662-2422						B. Generator's ID					
5. Transporter 1 (Company Name) NOBLETH TRUCKS INC.						C. State Transporter's ID 215 261-2220					
6. US EPA ID Number P A D 1 4 6 7 1 4 8 7 8						D. Transporter's Phone					
7. Transporter 2 (Company Name)						E. State Transporter's ID					
8. US EPA ID Number						F. Transporter's Phone					
9. Designated Facility Name and Site Address CSI CHEMICAL SERVICES, INC/ 1350 BALDWIN RD. ROSELAND, NJ 07068						G. State Facility's ID					
10. US EPA ID Number H T D 0 4 9 8 3 6 6 7 9						H. Facility's Phone (716) 734-8231					
11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)						12. Containers		13. Total Quantity		14. Unit	
a. 20. HAZARDOUS WASTE, 20 SOLID, H.O.S., 9, HA3077, III, (D007, D008), (lead, chrome)						No. Type		Quantity		Wt/Vol	
						001 DT 00013 Y				EPA Waste No. D007	
										STATE	
										EPA	
										STATE	
										EPA	
										STATE	
										EPA	
										STATE	
J. Additional Descriptions for Materials listed Above						K. Handling Codes for Wastes Listed Above					
a. A. BOLL 100 2; LEAD 9.2 PPM; CA BOLLION 9.2 PPM; 2; 1						a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/> d <input type="checkbox"/>					
b						b <input type="checkbox"/> c <input type="checkbox"/> d <input type="checkbox"/>					
15. Special Handling Instructions and Additional Information						CSI EMERGENCY RESPONSE INFORMATION (800) 765-8713 SR # 847112 PROFILE HD0010 REG #31 81413103					
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and state laws and regulations.											
If I am a large quantity generator, I certify that I have program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR if I am a small generator, I have made a good faith effort to minimize my waste and select the best waste management method that is available to me and that I can afford.											
Printed/Typed Name						Signature		Mo.		Day Year	
17. Transporter 1 (Acknowledgement of Receipt of Materials)						Signature		Mo.		Day Year	
18. Transporter 2 (Acknowledgement or Receipt of Materials)						Signature		Mo.		Day Year	
19. Discrepancy Indication Space						actual recd 50440 P ITEME SAME ITEMK 14					
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.											
Printed/Typed Name						Signature		Mo.		Day Year	
EILEEN CARTER						Eileen Carter		03		18 14	

In case of emergency or spill immediately call the National Response Center (800) 424-8802 and the N.Y. Dept. of Environmental Conservation (518) 457-7362.

DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS SUBSTANCES REGULATION

HAZARDOUS WASTE MANIFEST

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Form Approved. OMB No. 2050-0039. Expires 9-30-94

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA No. EJ D 0 1 1 3 9 2 7 3 5 0 0 0 0 6		Manifest Document No.		2. Page 1 of 1		Information in the shaded areas is not required by Federal Law.													
3. Generator's Name and Mailing Address FRAXAIR INC. 7000 OF SOUTH ROAD AVE LIVER, NJ 07034						A. State Manifest Document No. NY B 513896 4															
						B. Generator's ID															
4. Generator's Phone () FE(201) 862-2422						C. State Transporter's ID T-314374															
5. Transporter 1 (Company Name) BOONITH TRUCKS INC.						D. Transporter's Phone () 215 261-2228															
6. US EPA ID Number P A B 1 4 6 7 1 4 8 7 8						E. State Transporter's ID															
7. Transporter 2 (Company Name)						F. Transporter's Phone ()															
8. US EPA ID Number						G. State Facility's ID															
9. Designated Facility Name and Site Address CHEMICAL SERVICES, INC. 1550 BALMER RD. MODEL CITY, NY 14107						H. Facility's Phone (716) 754-0231															
10. US EPA ID Number E Y D 0 4 9 8 3 4 6 7 9																					
11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number) a. EQ. HAZARDOUS WASTE, SOLID, H.O.S., 9, HA3077, III, (D007, D008), (LEAD, CHARGE)						12. Containers No. Type		13. Total Quantity		14. Unit Wt/Vol		15. Waste No. EP 5007									
						001 DT		Ft 18				STATE									
b.										EPA		STATE									
c.										EPA		STATE									
d.										EPA		STATE									
J. Additional Descriptions for Materials listed Above A. SOIL 1001; LEAD 9.3 FPM; a. CHARGE 9.3 FPM; 9.3 F						K. Handling Codes for Wastes Listed Above a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/> d <input type="checkbox"/>															
15. Special Handling Instructions and Additional Information CHEMICAL SERVICES, INC. (800) 765-2713 PROFILE R08020 REG #31						81413106															
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and state laws and regulations. If I am a large quantity generator, I certify that I have program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR if I am a small generator, I have made a good faith effort to minimize my waste and select the best waste management method that is available to me and that I can afford.										Printed/Typed Name Dave Nicholson				Signature D. Nicholson				Mo. Day Year 03/17/94			
17. Transporter 1 (Acknowledgement of Receipt of Materials)										Printed/Typed Name Ambrose J. P. H.				Signature Ambrose J. P. H.				Mo. Day Year 03/17/94			
18. Transporter 2 (Acknowledgement or Receipt of Materials)										Printed/Typed Name				Signature				Mo. Day Year			
19. Discrepancy Indication Space actual rec'd 43880P										ITEM K - 12 FROM A - SAME											
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.										Printed/Typed Name EILEEN CARTER				Signature Eileen Carter				Mo. Day Year 02/19/94			

DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS SUBSTANCES REGULATION

HAZARDOUS WASTE MANIFEST

P.O. Box 12820, Albany, New York 12212

Please print or type. Do not Staple.

Form Approved. OMB No. 2050-0039. Expires 9-30-94

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA No. HJD01139273500007		Manifest Document No. 00007		2. Page 1 of 1		Information in the shaded areas is not required by Federal Law.	
3. Generator's Name and Mailing Address 1000 1000 1000 AVE. LINDEN, NJ 07036						A. State Manifest Document No. NY B 513867 6			
4. Generator's Phone (201) 862-2422						B. Generator's ID 130462			
5. Transporter 1 (Company Name) NORTH TRUCKS INC.						C. State Transporter's ID 130462			
6. US EPA ID Number PA D 146714870						D. Transporter's Phone (212) 461-2200			
7. Transporter 2 (Company Name)						E. State Transporter's ID			
8. US EPA ID Number						F. Transporter's Phone			
9. Designated Facility Name and Site Address CHM CHEMICAL SERVICES, INC. 1550 BALMAIN RD. MIDEL CITY, NY 14107						G. State Facility's ID			
10. US EPA ID Number HYD049836679						H. Facility's Phone (716) 754-2200			
11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)						12. Containers		13. Total Quantity	
a. HQ. HAZARDOUS WASTE, SOLID, H.O.S., 9, HAZ077, III, (D007, D008), (LEAD, CHROME)						No. Type		Unit	
						001 DT		Est. 45400	
b.								Wt/Vol	
c.								Waste No.	
d.								STATE	
J. Additional Descriptions for Materials listed Above						K. Handling Codes for Wastes Listed Above		EPA	
a. CHROMIUM 9.3 FPM, 1/2"						a		STATE	
b						b		EPA	
c						c		STATE	
d						d		EPA	
15. Special Handling Instructions and Additional Information								STATE	
CHM EMERGENCY RESPONSE INFORMATION (800) 765-8713						SR # 88731-1			
PROFILE ED0020 ERS #31						81413104			
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and state laws and regulations.									
If I am a large quantity generator, I certify that I have program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR if I am a small generator, I have made a good faith effort to minimize my waste and select the best waste management method that is available to me and that I can afford.									
Printed/Typed Name					Signature		Mo. Day Year		
							03/17/94		
17. Transporter 1 (Acknowledgement of Receipt of Materials)									
Printed/Typed Name					Signature		Mo. Day Year		
Gordon Bird					Gordon Bird		03/17/94		
18. Transporter 2 (Acknowledgement or Receipt of Materials)									
Printed/Typed Name					Signature		Mo. Day Year		
19. Discrepancy Indication Space									
actual rec'd 48180 P ITEM E-SAME FROM K-12									
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.									
Printed/Typed Name					Signature		Mo. Day Year		
EILEEN CARTER					Eileen Carter		03/18/94		

In case of emergency or spill immediately call the National Response Center (800) 424-9802 and the N.Y. Dept. of Environmental Conservation (518) 457-7362.



DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS SUBSTANCES REGULATION

HAZARDOUS WASTE MANIFEST

P.O. Box 12820, Albany, New York 12212

Please print or type. Do not Staple.

Form Approved. OMB No. 2050-0039. Expires 9-30-94

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA No. NY D01139273350003		Manifest Document No. 3		2. Page 1 of 1		Information in the shaded areas is not required by Federal Law.							
3. Generator's Name and Mailing Address PRAXAIR INC. FOOT OF SOUTH WOOD AVE. LINCOLN, NJ 07036						A. State Manifest Document No. NY B 513898 2									
4. Generator's Phone (201) 862-2477						B. Generator's ID NY D01139273350003									
5. Transporter 1 (Company Name) BORRITT TRUCKS INC.						C. State Transporter's ID TV 46579									
6. US EPA ID Number PAD146714878						D. Transporter's Phone (215) 261-2128									
7. Transporter 2 (Company Name)						E. State Transporter's ID									
8. US EPA ID Number						F. Transporter's Phone									
9. Designated Facility Name and Site Address CON CRITICAL SERVICES INC. 1550 BAYVIEW RD. ROSELAND, NJ 07068						G. State Facility's ID									
10. US EPA ID Number NY D049836679						H. Facility's Phone (716) 754-8231									
11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)						12. Containers No. Type		13. Total Quantity		14. Unit Wt/Vol					
a. LIQ. HAZARDOUS WASTE, SOLID, H.O.S., 9, HAZ3077. III, (3007, 3008), (LEAD, CHROMIUM)						001 DZ		22		T					
b.										EPA Waste No.					
c.										STATE					
d.										EPA					
J. Additional Descriptions for Materials listed Above A. 3007, 3008, LEAD 9.2 PPM; CHROMIUM 9.3 PPM; 3; 2						K. Handling Codes for Wastes Listed Above									
15. Special Handling Instructions and Additional Information CON EMERGENCY RESPONSE INFORMATION (800) 765-8713 PROFILE 880920 EPC 831						81413121									
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and state laws and regulations. If I am a large quantity generator, I certify that I have program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR if I am a small generator, I have made a good faith effort to minimize my waste and select the best waste management method that is available to me and that I can afford.						Printed/Typed Name Dave Widdow						Signature D. Widdow		Mo. Day Year 03/17/94	
17. Transporter 1 (Acknowledgement of Receipt of Materials)						Printed/Typed Name Charles Mocher						Signature Charles Mocher		Mo. Day Year 03/17/94	
18. Transporter 2 (Acknowledgement or Receipt of Materials)						Printed/Typed Name						Signature		Mo. Day Year	
19. Discrepancy Indication Space ITEM 12 - 15 actual found 48180P ITEM C - (TPA) ITEM B - SAME															
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.						Printed/Typed Name EILEEN CARTER						Signature Eileen Carter		Mo. Day Year 03/18/94	

In case of emergency or spill immediately call the National Response Center (800) 424-8802 and the N.Y. Dept. of Environmental Conservation (518) 457-7362.

DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS SUBSTANCES REGULATION

HAZARDOUS WASTE MANIFEST

P.O. Box 12820, Albany, New York 12212

Please print or type. Do not Staple.

Form Approved. OMB No. 2050-0039. Expires 6-30-94

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA No. NY D 0 1 1 3 9 2 7 3 5 0 0 0 0 5		Manifest Document No.		2. Page 1 of 1		Information in the shaded areas is not required by Federal Law.	
3. Generator's Name and Mailing Address PAALAIN INC. FOOT OF SOUTH WOOD AVE. LINDEN, NJ 07036		4. Generator's Phone (201) 862-7422		A. State Manifest Document No. NY B 513897 3		B. Generator's ID		C. State Transporter's ID	
5. Transporter 1 (Company Name) NORRITH TRUCKS INC.		6. US EPA ID Number PAD 1 4 6 7 1 4 6 7 8		D. Transporter's Phone (215) 261-2220		E. State Transporter's ID		F. Transporter's Phone	
7. Transporter 2 (Company Name)		8. US EPA ID Number		G. State Facility's ID		H. Facility's Phone			
9. Designated Facility Name and Site Address CEM CHEMICAL SERVICES, INC. 1550 BALMER RD. MODEL CITY, NY 14107		10. US EPA ID Number NY D 0 4 9 8 3 6 6 7 9		11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number) a. RQ. HAZARDOUS WASTE, SOLID, H.O.S., 9, NA3077, III, (D007, D008), (LEAD, CHROME)		12. Containers No. Type 0 0 1 D T 00022 T		13. Total Quantity 505	
								14. Unit Wt/Vol	
								Waste No. EPA 0007	
								STATE	
								EPA	
								STATE	
								EPA	
								STATE	
								EPA	
								STATE	
J. Additional Descriptions for Materials listed Above a. 2011 1002; LEAD 9.3 PPM; CHROME 9.3 PPM; S; F				K. Handling Codes for Wastes Listed Above					
15. Special Handling Instructions and Additional Information CEM EMERGENCY RESPONSE INFORMATION (800) 763-8712 PROFILE 800620 ERG #31									
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and state laws and regulations. If I am a large quantity generator, I certify that I have program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR if I am a small generator, I have made a good faith effort to minimize my waste and select the best waste management method that is available to me and that I can afford.									
Printed/Typed Name Dave Nicholson		Signature D. Nicholson		Mo. Day Year 03/17/94					
17. Transporter 1 (Acknowledgement of Receipt of Materials)									
Printed/Typed Name Bill Cassano		Signature Bill Cassano		Mo. Day Year 03/17/94					
18. Transporter 2 (Acknowledgement or Receipt of Materials)									
Printed/Typed Name		Signature		Mo. Day Year					
19. Discrepancy Indication Space actual rec'd 49440 P									
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.									
Printed/Typed Name EILEEN CARTER		Signature Eileen Carter		Mo. Day Year 03/17/94					

In case of emergency or spill immediately call the National Response Center (800) 424-9302 and the N.Y. Dept. of Environmental Conservation (518) 457-7362.

DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS SUBSTANCES REGULATION

HAZARDOUS WASTE MANIFEST

P.O. Box 12820, Albany, New York 12212

Form Approved. OMB No. 2050-0039. Expires 9-30-94.

Please print or type. Do not Staple.

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA No. N J D 0 1 1 3 9 2 7 3 5 0 0 0 9		Manifest Document No. 1		2. Page 1 of 1		Information in the shaded areas is not required by Federal Law.			
3. Generator's Name and Mailing Address PRAXAIR INC. 1001 SOUTH WOOD AVE. LYNN, NJ 07834				A. State Manifest Document No. NY B 513863 1							
4. Generator's Phone (201) 862-2422				B. Generator's ID 1001 SOUTH WOOD AVE LYNN NJ 07834							
5. Transporter 1 (Company Name) NORWICH TRUCKS INC.				6. US EPA ID Number PAD 146714878		C. State Transporter's ID 1001 99733					
7. Transporter 2 (Company Name)				8. US EPA ID Number		D. Transporter's Phone (215) 261-2220					
9. Designated Facility Name and Site Address CHM CHEMICAL SERVICES, INC. 1550 BALMER RD. MODEL CITY, NY 14107				10. US EPA ID Number NY D 0 6 9 8 3 6 6 7 9		E. State Transporter's ID					
						F. Transporter's Phone					
						G. State Facility's ID					
						H. Facility's Phone (716) 754-0711					
11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)						12. Containers		13. Total Quantity		14. Unit	
a. NO. HAZARDOUS WASTE, SOLID, H.O.S., 9, HAZ077, III, (D007, D008), (LEAD, CHROME)						No. Type 001 BT		22		T	
b.										Waste No. EPA 0007	
c.										STATE	
d.										EPA	
										STATE	
J. Additional Descriptions for Materials Listed Above						K. Handling Codes for Wastes Listed Above					
a. LEAD 9.3 PPM, 9.3 PPM						a. <input type="checkbox"/> c. <input type="checkbox"/>					
b.						b. <input type="checkbox"/> d. <input type="checkbox"/>					
15. Special Handling Instructions and Additional Information CHM EMERGENCY RESPONSE INFORMATION (800) 745-8713 PROVILE RD0020 INC # 31 81413118											
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and state laws and regulations. If I am a large quantity generator, I certify that I have program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR if I am a small generator, I have made a good faith effort to minimize my waste and select the best waste management method that is available to me and that I can afford.											
Printed/Typed Name						Signature DAVID FALL			Mo. Day Year 03/17/94		
17. Transporter 1 (Acknowledgement of Receipt of Materials)											
Printed/Typed Name						Signature David Fall			Mo. Day Year 03/17/94		
18. Transporter 2 (Acknowledgement or Receipt of Materials)											
Printed/Typed Name						Signature			Mo. Day Year		
19. Discrepancy Indication Space ITEM A - 14 ITEM B - SAME											
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.											
Printed/Typed Name ELLEN C. ER						Signature Ellen C. Er			Mo. Day Year 03/18/94		



INTERNATIONAL
TECHNOLOGY
CORPORATION

FACSIMILE

DATE: 6/28/94
PAGE ONE OF 9

TO: Nick DiFranco

FAX #: () 738-4011 TEL #: ()

FROM: Paul Dimakos

REGIONAL OFFICE
165 FIELDCREST AVENUE
EDISON, NEW JERSEY 08837
TEL: 908-225-2000 FAX: 908-225-1691

Project No. _____
MESSAGE: Attached, revised text only as per your
comments. Pls. call me ASAP to discuss
logistics for final bound documents etc.
Thank you.

Paul

☐ PLEASE CALL

List of Figures

Figure No.	Title
1	Site Location Map
2	Facility Layout with Areas of Concern, Soil Sampling Locations and Analytical Results
3	As Built of Facility Layout

List of Appendices

Appendix	Title
A	Soil Erosion and Sediment Control Plan Approval and Compliance Letters
B	Department Approved Use Restriction
C	Certification of Backfill Virgin Soil
D	Soil Disposal Waste Manifests
E	Certification of Clean Fill Grading Material
F	Well Abandonment Reports

2.0 Background

2.1 Environmental Setting and Site Information

The following section presents a profile of the environmental characteristics of the site and general area.

2.1.1 General

The Linde facility was utilized as a hydrogen transfill and repackaging plant. The property is situated in a heavily industrialized area on South Wood Avenue, north of Tremley Point Road in Linden, Union County, New Jersey. Linde leased the property from LCP Chemicals and Plastics, Inc. (LCP).

The property consists of approximately 2.1 acres. An estimated forty percent of the property is occupied by buildings and other impervious structures and the remainder is covered with traprock and gravel. The location of the site is shown on Figure 1, attached at the end of this document.

2.1.2 Site History

Prior to 1957 the property was owned by GAF Corporation but was vacant land. In 1957 the property was leased by Union Carbide Corporation-Linde Division (UCC-Linde). Subsequent to 1957, LCP became property owner and continued this property lease by UCC-Linde. UCC-Linde operated the Linden facility as a hydrogen transfill and repackaging plant. In 1988, operation of the facility was transferred to Linde Gases of the Mid Atlantic Inc., a wholly owned subsidiary of Union Carbide Industrial Gases Inc., and continued to operate as a hydrogen transfill and repackaging plant until the cessation of operations in May 1990.

2.1.3 Geology and Soils

The areas in the vicinity of the site are underlain by Brunswick sandstone and/or shale. Soils are stratified silty clays usually very soft and highly compressible. The top 2 to 5 feet of marsh area consists of an organic layer or decomposed roots from tidal marsh plant growth.

When the property was developed, approximately seven to eight feet of fill material was deposited over the natural marsh and silty clay deposits. It is well documented that various heterogenous materials, including cinder ash/slag, were used as backfill to increase site grade to its existing elevation.

In February 1993, Linden submitted a *Cleanup Plan*, which recommended a cap of all unpaved surface areas of the site with an impermeable three inch layer of asphalt pavement. In April 1994, Linde received from the NJDEPE, a draft approval letter commenting on the February 1993 *Cleanup Plan*. This draft letter approved proposed actions, by Linde, for the Linden site. The NJDEPE also recommended that all applicable permits be obtained before the proposed action commenced. Only one permit was necessary, a *Soil Erosion and Sediment Control Plan*. The plan was submitted to the Somerset-Union Soil Conservation District in October 1993 and approved on December 6, 1993. Appendix A presents the approval and compliance letters for the *Soil Erosion and Sediment Control Plan*, from the Somerset-Union Soil Conservation District.

The ISRA soil sampling and analysis results to date are summarized on Figure 2. The groundwater sampling and analysis results are summarized on Tables 2, 3, 4 and 5. Each ISRA case area of concern and the related sampling activities are discussed below.

Area A - Abandoned Cylinder Caustic Bath Sump

A sump was previously used for caustic bath liquid generated from exterior paint stripping of gas cylinders. Figure 2 shows the location of the caustic bath sump behind the charging plant.

This area was evaluated by a surficial soil sampling program on the perimeter of the sump. Two samples, A-1 and A-2, were collected at 1.0 to 1.5 feet below grade and analyzed for priority pollutant volatile organics plus fifteen (VO+15), priority pollutant heavy metals (Metals) and total petroleum hydrocarbons (TPHC). Samples A-1 and A-2 were collected on June 12, 1990. Due to the elevated levels of Metals detected in samples A-1 and A-2, nine additional soil samples, at sample locations A-2 through A-6, were collected at 1.0 to 1.5 and 4.0 to 4.5 foot intervals. These samples were collected on June 3 and 4, 1991 and analyzed for Metals only.

Results of the June 1990 and June 1991 soil sampling suggested that the caustic solution, had overflowed into the soil surrounding the sump. As a result, the caustic solution, likely containing dissolved Metals in solution, had apparently contaminated the soil surrounding this sump.

Due to the extent of Metals in the caustic sump area, an "at peril" remedial excavation was undertaken in this area in April 1992. Confirmatory post-excavation soil samples were collected on April 16, 1992 and analyzed for Metals. Analytical results of the post-excavation soil sampling indicated Metals contamination remained in the soil in this area. However, the remedial excavation clearly revealed that this area had been filled with cinder ash/slag material from grade elevation to at least 4.5 feet below grade. Investigation into NJDEPE public files revealed that a Metals contaminated historic fill condition, documented to the turn of the century, existed at

EXTENDED TO

Linde's leasehold property and hundreds of acres of surrounding properties. Therefore, the resultant conclusion was that the source of the Metals contamination was the cinder ash/slag fill material and not facility operations. Figure 2 presents all sampling locations and analytical results for this area to date. The capping remedial action was completed for this area of concern.

Area B - Non Contact Cooling Water Sump

A non-contact cooling water sump was utilized to accept non-contact cooling water overflow from the adjacent cooling tower. The non-contact cooling water was circulated between the cooling tower and the compressors. Figure 2 shows the location of the cooling water sump behind the charging plant.

This area was evaluated by a surficial soil sampling program on the perimeter of the sump. Two samples, B-1 and B-2 were collected at 1.0 to 1.5 feet below grade and analyzed for Metals and TPHC. Samples B-1 and B-2 were collected on June 12, 1990. Due to the elevated levels of Metals detected in samples B-1 and B-2, eight additional soil samples, at sample locations B-3 through B-7 were collected at 1.0 to 1.5 and 4.0 to 4.5 foot intervals. These samples were collected on June 4, 1991 and analyzed for Metals only.

Results of the June 1990 and June 1991 soil sampling suggested that the non-contact cooling water, apparently containing Metals in solution, had overflowed and contaminated the soil surrounding this sump.

Due to the extent of Metals in the cooling water sump area, an "at peril" remedial excavation was undertaken in this area in April 1992. Confirmatory post-excavation soil samples were collected on April 16, 1992 and analyzed for Metals. Analytical results of the post-excavation soil sampling indicated Metals contamination remained in the soil in this area. However, the remedial excavation clearly revealed that this area had been filled with cinder ash/slag material from grade elevation to at least 4.5 feet below grade. Investigation into NJDEPE public files revealed that a Metals contaminated historic fill condition, documented to the turn of the century, existed at Linde's leasehold property and hundreds of acres of surrounding properties. Therefore, the resultant conclusion was that the source of the Metals contamination was the cinder ash/slag fill material and not facility operations. Figure 2 presents all sampling locations and analytical results for this area to date. The capping remedial action was completed for this area of concern.

Area C - Former 1,000 Gallon No. Two Fuel Oil Underground Storage Tank

A steel 1,000 gallon No. Two fuel oil UST is located near the former garage. Figure 2 shows the location of the tank. The tank was properly decommissioned in place by Linde in 1974 and

Area E - Former 4,000 Gallon No. Two Fuel Oil Underground Storage Tanks

Two 4,000 gallon No. two fuel oil USTs were located south of the charging plant. Figure 2 shows the former location of these tanks. Both USTs were excavated, cleaned, dismantled and disposed of in July 1988. This area is discussed in more detail in Section 2.2.1 of this report and in greater detail in the Report on Excavation of Underground Fuel Oil Storage Tanks by IT in August 1988. This IT report was included in the May 1990 Site Evaluation Submission for this ISRA case, No. 90367. The capping remedial action was completed for this area of concern.

Area F - Septic Tank and Leach Field

A septic tank and leach field are located east of the charging plant. Figure 2 shows the location of the septic tank and leach field. The septic tank was used for sanitary wastes only. One sludge sample, F-sludge, and one liquid sample, F-liquid, were collected in June 1990 from the septic tank and analyzed for Hg and B/N+15. Results of the sludge and liquid sample analyses indicated 80 and 0.0003 parts per million (ppm) of Hg were detected in the sludge sample and liquid samples, respectively. Results of the sludge and liquid B/N+15 analyses indicated 20 ppm and 0.058 ppm total base/neutral organic compounds were detected in the sludge and liquid samples, respectively.

Additionally, two soil samples, F-1 and F-2, were collected within the septic tank leach field at the 3.5 to 4.0 foot interval below grade. Each sample was collected in June 1990 and analyzed for B/N+15 and Hg. Results of the B/N +15 analyses of samples F-1 and F-2 indicated there were no base/neutral organics detected in the septic tank leach field. The Hg analyses results indicated there was no Hg detected in soil sample F-1 and 2.6 to 4.3 ppm of Hg were detected in soil sample F-2.

Soil sample locations F-1 and F-2 were resampled in August 1991 for analysis of the remaining priority pollutant Metals and TPHC. These samples were designated as F-1A and F-2A. The analytical results of the resampling indicated Metals were present in the soil in the area of the septic tank leach field. The Metals were attributed to the contaminated historic fill material observed throughout the property. Figure 2 presents all sampling locations and analytical results for this area, to date. The capping remedial action was completed for this area of concern.

Area H - Former Hydrogen Bladder Storage Tank Location

A circular elevated concrete pad, located east of the charging plant, was used as a base for a hydrogen bladder storage tank until the tank was removed. The hydrogen gas, entering the bladder tank via overhead piping from the adjacent LCP facility was known to contain Hg. Figure 2 shows the location of the circular tank pad.

Groundwater

A shallow groundwater investigation has been completed at this site utilizing eight groundwater monitoring wells. Initially, six wells were installed in June 1991 and two additional wells were installed in April 1992.

Groundwater samples were collected on June 27, 1991 and were analyzed for VO+15, B/N+15, TPHC and Metals. A second round of groundwater samples was collected on July 31, 1991 and analyzed for VO+15, B/N+15, TPHC and Metals. These first two sampling rounds utilized the initial six wells. A third round of groundwater samples was collected on April 30, 1992 utilizing all eight wells.

In the third groundwater sampling round, the original six wells MW-1 through MW-6, were analyzed for Metals only, with the exception of MW-2, analyzed for VO+15 also. The two additional wells, MW-7 and MW-8 were sampled on December 2, 1992 and analyzed for VO+15 only.

Groundwater level measurements from all groundwater sampling events indicate groundwater flow direction is south to southwest, toward the Rahway River.

Results of the shallow groundwater investigation at the facility property indicated facility operations have not impacted shallow groundwater. Any elevated levels of contaminants in the shallow groundwater of this area are documented in NJDEPE files as the result of off-site sources. No remediation was conducted for this area of concern.

3.0 Findings/Remedial Actions

From an evaluation of sampling analytical results and visual observations from site sampling and excavation activities, it is apparent that Metals are the only contaminants posing any significant potential threat to human health and the environment at this site. Furthermore, it is apparent that Metals contamination at this site is inherent in the cinder slag material utilized as backfill for elevating site grade and general site development. This backfilling is well documented in NJDEPE files and predates Linde's tenancy at this site. This Remedial Action - asphalt capping was implemented at this site to achieve protection of human health and the environment from heavy metals (Metals) contamination in site fill material. Capping the surface area of the site with an impermeable asphalt pavement layer was the most cost-effective and technically viable Remediation Action. In conjunction with the asphalt capping, the NJDEPE requires a Department Approved Use Restriction for the site. See Appendix B for a copy of the approval.

3.1 Findings/Excavation Backfilling, Grading and Surface Pavement Cap

Backfilling for the remedial excavations implemented in Areas A, B and D was completed in _____. The backfill material was certified clean soil from a virgin soil pit. Appendix C contains a copy of the certification of the backfill virgin soil. Appendix D contains copies of the excavated soil waste disposal manifests for soil removed from these areas for proper off-site disposal.

To preclude ingestion of the Metals in the fill material, from either direct contact or by inhalation of dusts, an impermeable three inch layer of asphalt pavement was placed on all unpaved surface areas of the site. This procedure commenced on April 25, 1994, with grading of all surface areas of the site. Contaminant - free fill was deposited to facilitate proper grading of the site. This fill material consists of NJDEPE approved recycled concrete and/or brick which meets NJDEPE Division of Solid Waste requirements. See Appendix E for a certification of the clean fill grading material. Grading was necessary to produce proper drainage of surface water away from the site. A total of 511 tons of the recycled clean fill material were spread and graded at the site. The fill was placed in no more than six inch layers and compacted by a vibratory roller. After final grading and compaction, a three inch layer of asphalt pavement was placed over all unpaved surfaces. This procedure was completed on May 23, 1994. During the paving and grading, a representative of the Somerset-Union Soil Conservation District visited the site weekly to assure the specifications of the approved *Soil Erosion and Sediment Control Plan* was implemented. Figure 3 shows those areas of the facility property where the remedial asphalt cap was applied.

3.2 Well Abandonment

The eight shallow groundwater monitoring wells onsite were sealed, according to N.J.A.C. 7:9-9, by a New Jersey licensed well sealer on October 13, 1993. The well abandonment reports were submitted to the Bureau of Water Supply, Planning and Management. Appendix F contains copies of the well abandonment reports.

3.3 Project Costs

The total cost for implementing the Cleanup/Remedial Action, including labor, equipment and materials was \$69,400.

CERTIFICATE OF INSURANCE

Name and Address: (of each covered location)

Praxair, Inc.
South Wood Avenue
Linden, NJ 07036

Policy Number: SRI 3345127

Endorsement (if applicable):

Period of coverage: (current policy period)

June 30, 1993 - June 30, 1994

Name and Address of (Insurer or Risk Retention Group):

Continental Insurance Company
180 Maiden Lane
New York, New York 10038

Name and Address of Insured:

Praxair, Inc.
39 Old Ridgebury Road
Danbury, CT 06817

1. Continental Insurance Co., the "Insurer" as identified above, hereby certifies that it has issued liability insurance covering the following underground storage tank(s):

Location

No. of Tanks

Praxair, Inc.
South Wood Avenue
Linden, NJ 07036

5

for "compensating third parties for bodily injury and property damage caused by" either "sudden accidental releases" or "nonsudden accidental releases" or "accidental releases": from operating the underground storage tank(s) identified above.

The limits of liability are \$500,000 per occurrence and \$2,000,000 aggregate exclusive of legal defense costs. This coverage is provided under SRI 3345127. The effective date of said policy is June 30, 1993.

2. The Continental Insurance Co. further certifies the following with respect to the insurance described in Paragraph 1:
 - a. Bankruptcy or insolvency of the insured shall not relieve the Continental Insurance Co. of its obligations under the policy to which this certificate applies.
 - b. The Continental Insurance Co. is liable for the payment of amounts within any deductible applicable to the policy to a damaged third-party, with a right of reimbursement by the insured for any such payment made by the Continental Insurance Co. This provision does not apply with respect to that amount of any deductible for which coverage is demonstrated under another mechanism or combination of mechanisms as specified in 40 CFR 280.95-280.102.
 - c. Whenever requested by (a Director of an implementing agency), the Continental Insurance Co. agrees to furnish to (the Director) a signed duplicate original of the policy and all endorsements.
 - d. Cancellation or any other termination of the insurance by the Continental Insurance Co. will be effective only upon

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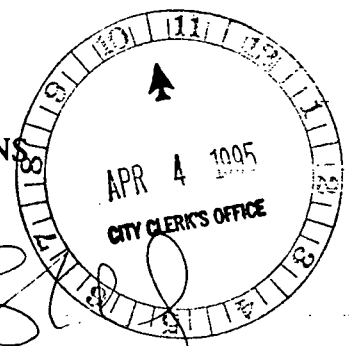
JOANNE RAJOPPI
REGISTER

DECLARATION OF ENVIRONMENTAL RESTRICTIONS

Prepared by:



Suzanne E. Blanchard, Esquire



This Declaration of Environmental Restrictions, made as of the 23RD day of SEPTEMBER 1994, by LCP Chemicals New Jersey, A Division of Hanlin Group, Inc. (formerly LCP Chemicals & Plastics, Inc.) of Raritan Plaza II, Raritan Center, Edison, New Jersey 08818, together with its successors and assigns (collectively "Owner").

WITNESSETH:

WHEREAS, Owner is the owner in fee simple of certain real property (the "Property") designated as Lot 3, Block 587 on the tax map of the City of Linden, Union County, more particularly described on Exhibit A attached hereto and made a part hereof; and

WHEREAS, the New Jersey Department of Environmental Protection and Energy ("Department") has issued a remedial approval in ECRA/ISRA Case Number 90367, Linde Gases of the Mid-Atlantic, concerning the Property in which the Department has approved the use of nonresidential soil standards, institutional controls, and engineering controls in accordance with P. L. 1993 c. 139 (S-1070); and

WHEREAS, this Declaration itself is not intended to create any interest in real estate in favor of the Department, nor to create a lien or encumbrance against the Property, but merely is intended to reflect the regulatory and statutory obligations imposed as a condition of using nonresidential standards; and

WHEREAS, the area described on Exhibit B attached hereto and made a part hereof (the "Identified Area") contains contaminants;

WHEREAS, the type, concentration and specific location of the contaminants are described on one or more diagrams, maps and/or tables on Exhibit B attached hereto and made a part hereof; and

WHEREAS, to prevent the potential for unacceptable risk of exposure to the contamination of humans or the environment, the Identified Area is and will remain paved, and the location of the paving is shown in Exhibit B; and

WHEREAS, in accordance with the remedial approval, and in consideration of the terms and conditions of the remedial approval, and other good and valuable consideration Owner has agreed to subject the Property to certain statutory and regulatory requirements which impose

restrictions upon the use of the Property, and to restrict certain activities at the Property, as ~~set~~ forth below; and

WHEREAS, Owner intends to notify all interested parties that such regulatory and statutory restrictions shall be binding upon and enforceable against Owner and Owner's successors and assigns while such own and/or operate at the Property.

NOW, THEREFORE, Owner agrees to be subject to the regulatory and statutory requirements applicable to those who seek to remediate property to nonresidential direct contact soil cleanup criteria and hereby notifies all interested parties, owners, and operators that the applicable regulations and statutes require of Owner and operators while owning or operating the Property as follows:

1. RESTRICTED USES.

(a) Owner, and all operators of the Identified Area (as described on Exhibit B), shall allow only nonresidential use of such Identified Area.

2. WRITTEN APPROVAL FOR PROJECTS INVOLVING ALTERATIONS, IMPROVEMENTS, AND DISTURBANCES AT THE IDENTIFIED AREAS. Owner and operators shall not make, nor allow to be made, any alteration, improvement, or disturbance in, to, or about the Identified Area which creates an unacceptable risk of exposure to contamination to humans or the environment, or results in a disturbance of any engineering control designed to contain or reduce exposure to the contaminants, without first obtaining the express written consent of the Department, which consent shall be given or withheld at the reasonable discretion of Department. Nothing herein shall constitute a waiver of the Owner's obligation to comply with all applicable laws and regulations.

3. EMERGENCY PROJECTS. In the event of an emergency which presents a significant risk to human health, safety, or the environment, the application of Paragraph 2 above may be unilaterally suspended by the Owner, provided the Owner:

- (a) Immediately notifies the Department of the emergency;
- (b) Limits both the actual disturbance and the time needed for the disturbance to the minimum reasonably necessary to adequately respond to the emergency;
- (c) Implements all measures necessary to limit actual or potential, present or future risk of exposure to the residual contamination to humans or the environment; and
- (d) Implements restoration of the disturbed areas to the preemergency conditions to the extent reasonably possible, and provides a report to the Department of such emergency efforts.

4. EXEMPTED PROJECTS. Express written consent of the Department is not required for any alteration, improvement, or disturbance that:

(a) provides for restoration of any disturbance of an engineering control to pre-disturbance conditions within sixty days of completion of the project causing such disturbance, and

(b) does not create contaminant levels above those specified in Exhibit B, provided that all applicable worker health and safety laws and regulations are followed during the alteration, improvement, or disturbance.

5. NOTICE TO LESSEES AND OTHER HOLDERS OF PROPERTY INTERESTS.

(a) Owner shall cause all leases, grants, and other written transfers of interest by the Owner in the Property to contain a provision expressly requiring all holders thereof to take the Property subject to the use restriction and not to violate any of the conditions of this Declaration of Environmental Restrictions.

(b) Nothing contained in this paragraph 5 shall be construed as limiting any obligation of Owner to provide any notice required by any law, regulation, or order of any governmental authority.

6. ENFORCEMENT OF VIOLATIONS. The restrictions provided herein are for the benefit of the Department and shall be enforceable against any person who knowingly violates this Declaration, solely by the Department. A violation of this Declaration of Environmental Restrictions shall not have an adverse impact on the status of the ownership of and title to the Property. To enforce violations of this Declaration of Environmental Restrictions, the Department may initiate an action in Superior Court or as otherwise allowed by law against any person who is in any way responsible for a violation hereof and seek all available remedies, including without limitation, penalties and injunctive relief. Such enforcement proceedings shall not be initiated against past Owners or operators who have not violated this Declaration.

7. SEVERABILITY. If any court or other tribunal determines that any provision of this Declaration is invalid or unenforceable, such provision shall be deemed to have been modified automatically to conform to the requirements for validity and enforceability as determined by such court or tribunal. In the event that the provision invalidated is of such a nature that it cannot be so modified, the provision shall be deemed deleted from this instrument as though it had never been included herein. In either case, the remaining provisions of this Declaration shall remain in full force and effect.

8. **SUCCESSORS AND ASSIGNS.** This Declaration shall be binding upon Owner and upon Owner's successors and assigns, and the Department, its agents, contractors, and employees, and to any other person performing remediation under the direction of the Department.

9. **TERMINATION AND MODIFICATION.**

(a) This Declaration shall terminate only upon filing of an instrument, executed by the Department, in the office of the Register of Deeds and Mortgages of Union County, New Jersey, expressly terminating this Declaration.

(b) Owner may request in writing at any time that the Department modify or terminate this Declaration of Environmental Restrictions or execute termination proceedings based on, for example, the Owner's proposal that the property does not pose an unacceptable risk to human health or the environment. Within 90 calendar days after receiving the request the Department shall either:

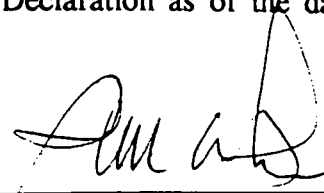
- i. execute the termination or modification of this Declaration; or
- ii. issue a draft notice of intent to deny.

The Department shall set forth in a draft notice of intent to deny the request its basis for its decision. The Owner can respond to the draft denial by providing new or additional information or data. The Department shall review any such new or additional information and issue a final decision to execute the agreement or deny the request within 60 calendar days of the Department's receipt of the Owner's response.

IN WITNESS WHEREOF, Owner has executed this Declaration as of the date first written above.

ATTEST: LCP CHEMICALS NJ,
A DIVISION OF HANLIN
GROUP, INC.

By:

 Actg CEO

RANDALL HANSEN, ACTING CHIEF
EXECUTIVE OFFICER

By:

STATE OF NEW JERSEY

SS.:

COUNTY OF UNION

I certify that on 23, 1994, RANDALL HANSEN personally came before me, and this person acknowledged under oath, to my satisfaction, that:

(a) this person is the ACTING CHIEF of Hanlin Group, Inc., the corporation named in this document;
EXECUTIVE OFFICER

(b) this person is the attesting witness to the signing of this document by the proper corporate officer who is the president of the corporation;

(c) this document was signed and delivered by the corporation as its voluntary act and was duly authorized;

(d) this person knows the proper seal of the corporation which was affixed to this document; and

(e) this person signed this proof to attest to the truth of these facts.

Signed and sworn before me on this 23rd

day of September, 1994.

Lynne Wagner
Notary Public

LYNNE C. WAGNER
A Notary Public of New Jersey
My Commission Expires October 19, 1998

Description of Property to be Conveyed
to Linden Chlorine Products, Inc.
by GAF Corporation
City of Linden, Union County, New Jersey

BEGINNING at the terminus of the Second Course of the Second Tract in a deed from Central Railroad Company of New Jersey to General Aniline & Film Corporation dated January 19, 1967, and recorded on January 20, 1967 in Deed Book 2794 on Page 745 in the Union County Register's Office; Thence

- (1) North $58^{\circ}-57'-30''$ East, seventeen feet (17.00) to a point; Thence
- (2) North $31^{\circ}-02'-30''$ West, three hundred ten feet and fifty eight one-hundredths of a foot (310.58) to a point;
- Thence (3) North $28^{\circ}-58'-40''$ West, eighty seven feet and seven one-hundredths of a foot (87.07) to a point of curve;
- Thence (4) Curving to the right along a curve having a Radius of three hundred forty feet and ninety one one-hundredths of a foot (340.91) an arc distance of one hundred fifty three feet and twenty five one-hundredths of a foot (153.25) to a point of tangency;
- Thence (5) North $3^{\circ}-13'-20''$ West, sixty nine feet and thirty two one-hundredths of a foot (69.32) to a point;
- Thence (6) Curving to the right along a curve having a Radius of one thousand four hundred seven feet and sixty nine one-hundredths of a foot (1,407.69) an arc distance of one hundred ninety five feet and seventy one one-hundredths of a foot (195.71) to a point;
- Thence (7) North $75^{\circ}-50'-28''$ East, two hundred nineteen feet and seventy four one-hundredths of a foot (219.74) to a point;
- Thence (8) South $64^{\circ}-52'-17''$ East, nine hundred eighty three feet and twelve one-hundredths of a foot (983.12) to a point in the Pierhead and Bulkhead line of the Arthur Kill;
- Thence (9) North $2^{\circ}-42'-17''$ West, along the said Pierhead and Bulkhead line of the Arthur Kill, eighty six feet and forty one-hundredths of a foot (86.40) to a point;
- Thence (10) North $18^{\circ}-11'-43''$ East, continuing along the said Pierhead and Bulkhead line of the Arthur Kill, forty three feet and ninety two one-hundredths of a foot (43.92) to a point;
- Thence (11) North $64^{\circ}-52'-17''$ West, six hundred five feet and twenty seven one-hundredths of a foot (605.27) to a point of curve;
- Thence (12) Curving to the right along a curve having a Radius of two hundred fifty feet (250.00) an arc distance of one hundred ninety five feet and forty two one-hundredths of a foot (195.42) to a point of tangency;
- Thence (13) North $20^{\circ}-05'$ West, five hundred seventy five feet and one one-hundredth of a foot (575.01) to a point;
- Thence (14) North $74^{\circ}-55'$ West, two hundred six feet and nineteen one-hundredths of a foot (206.19) to a point;

Thence (15) North 15°-05' East, one hundred sixty four feet and forty one-hundredths of a foot (164.40) to a point;

Thence (16) North 74°-52' West, three hundred seventy two feet and ten one-hundredths of a foot (372.10) to a point;

Thence (17) North 15°-17' East, forty four feet and fifty nine one-hundredths of a foot (44.59) to a point;

Thence (18) North 74°-55' West, twenty seven feet and eighty four one-hundredths of a foot (27.84) to a point;

Thence (19) South 64°-23'-30" West, one hundred thirty three feet and twenty eight one-hundredths of a foot (133.28) to a point;

Thence (20) South 15°-46' West, one hundred three feet (103.00) to a point;

Thence (21) North 87°-03'-11" West, forty one feet and eighty nine one-hundredths of a foot (41.89) to a point;

Thence (22) North 75°-25' West, seventy five feet and fifty four one-hundredths of a foot (75.54) to a point;

Thence (23) North 54°-56' West, one hundred seventeen feet and forty seven one-hundredths of a foot (117.47) to a point;

Thence (24) North 79°-38'-10" West, two hundred thirty three feet and eighty three one-hundredths of a foot (233.83) to a point;

Thence (25) North 82°-00'-12" West, ninety four feet and sixty seven one-hundredths of a foot (94.67) to a point;

Thence (26) South 37°-56' West, three hundred feet (300.00) to a point in the Sixth Course of the First Tract in the recorded deed mentioned hereinbefore;

Thence (27) South 52°-18' East, along part of said Sixth Course in the recorded deed mentioned hereinbefore, seven hundred eighty two feet and forty two one-hundredths of a foot (782.42) to a point;

Thence (28) South 46°-03'-10" East, along the Seventh Course in the recorded deed mentioned hereinbefore, five hundred twenty two feet and seventy seven one-hundredths of a foot (522.77) to a point;

Thence (29) South 31°-07'-30" East, three hundred twenty feet and sixty five one-hundredths of a foot (320.65) to a point;

Thence (30) South 58°-52'-30" West, two feet and ninety six one-hundredths of a foot (2.96) to a point;

Thence (31) South 31°-02'-30" East, five hundred thirty feet (530.00) to the point and place of BEGINNING.

Easements and Other Agreements

Reservation by Central Railroad of New Jersey of the right of ingress and egress in common with GAF Corporation and others, over a 24 foot wide driveway, in Deed Book 2356, Page 634, in Union County. Union Carbide and Carbon Corporation (Linde Division) has been granted a right to use said driveway.

Grant of easement to Elizabethtown Water Company, in Deed Book 2739, Page 990, and in Deed Book 2917, Page 226, in Union County, New Jersey.

Grant of easement to Elizabethtown Consolidated Gas Company in Deed Book 2608, Page 138, and in Deed Book 2611, Page 213, in Union County, New Jersey.

Grant of right of way and easement to City of Linden, in Deed Book 533, Page 233, Deed Book 533, Page 589, Deed Book 588, Page 499, and relocated in Deed Book 2681, Page 225, Deed Book 2924, Page 209, and Deed Book 2946, Page 162, in Union County, New Jersey.

Sidetrack agreements and the operating agreement between The Central Railroad Company of New Jersey and General Aniline & Film Corporation, in Deed Book 2795, Page 925. The parties understand that sidetrack agreements and operating agreement or agreements are being prepared by The Railroad Company to cover railroad tracks on respective lands of parties.

Grant to Linden Roselle Sewerage Authority in Deed Book 1898, Page 168, in Union County, New Jersey.

Grants of rights of way to Elizabethtown Water Company for 12 inch water line along and east of former Sound Shore Railroad Company. (Not recorded.)

Grant to Union Carbide and Chemical Company of a right of way for a nitrogen pipeline, dated November 3, 1967, recorded January 2, 1968, in Deed Book 2821, Page 929.

Railroad License Agreement and Road Agreement in Deed Book 1847, Page 79, in Union County, New Jersey.

Rights granted to the Linden Roselle Sewerage Authority for a 24 inch force main and 30 inch storm sewer.

Agreements, dated January 17, 1956, April 6, 1970 and January 27, 1971, with Public Service Company of New Jersey relating to certain encroachments and for rights to install electric lines and to install road lighting on poles along the road and in the area of the substation.

Lease agreement with Union Carbide & Carbon Corporation dated March 22, 1957 as amended and grant of easement rights to Union Carbide & Carbon Corporation for hydrogen, steam, brackish water, fresh water pipelines and sewer lines. (Not recorded.)

The rights, easements and rights of way granted pursuant to the Agreement of June 16, 1972 between the parties and to be executed at the Closing.

Easement Agreement with Central Railroad of New Jersey in Deed Book 2771, Page 858, in Union County.

Easement Agreement with Sinclair Refining Company in Deed Book 2802, Page 542, in Union County.

Assignment Agreement in Deed Book 2802, Page 839, in Union County.

Pipeline Easement in Deed Book 2821, Page 929, in Union County.

Grant to Elizabethtown Gas Company in Deed Book 2909, Page 697, in Union County.

Exhibit B



EXHIBIT "A"

Premises described as follows:

Property Location: Foot of South Wood Avenue
City: Linden
County: Union
State: New Jersey

Block Number: 587

Lot Numbers: 3.1

General Administration (office) Building and Tractor/Trailer parking area are located in lot 3.1 and generally described in the Northeast Region of facility bordering GAF's property.

The location of the storage tank(s) will either be the West Side of Building (#220) of approximately 25' x 80' or underlying land of the 2 x 25,000 gallon existing storage bullets located in the Northeast corner next to property line.

See attached plot plan.

**LIQUID CARBONIC
CARBON DIOXIDE CORPORATION**

DRY ICE PLANT • P.O. BOX 130 • BURLINGTON, NJ 08016



AREA CODE 609 - 387-0770

*Copy file
& FILE LINDEN*

LCP Chemicals, New Jersey
a Division of Hanlin Group Inc.
Raritan Plaza II, Raritan Center
Edison, NJ 08818
Attn.: Mr. Carl Devoe

January 30, 1996

Dear Carl,

Last week I visited our lease property at Linden NJ. Our office had been broken into and all office furniture and hardware was gone. The doors to the building were wide open. At this point, it is not worth continuing to lease the property.

This letter shall serve as notification to terminate our lease agreement regarding the LCP Linden property. Liquid Carbonic will not lease the property after March 31, 1996.

If you have any questions, feel free to call me.

cc: Chuck Stout
Brian Curtis
Dan Dalner
Jim Diemer

Alan Margulies (for LCP) ~~certified~~ Federal Express)

TERMINAL SERVICE AGREEMENT
LINDEN, NEW JERSEY

This agreement made and entered into on April 1, 1988, by and between LCP Chemicals, New Jersey, a Division of Hanjin Group, Inc., having an office at Raritan Plaza II, Raritan Center, Edison, NJ 08818, hereinafter called "Terminal" and LIQUID CARBONIC CARBON DIOXIDE CORP., having an office at 1280 Wall Street West, Lyndhurst, NJ 07071, hereinafter called "Customer", covers furnishing of building, terminalling storage site and handling of carbon dioxide, hereinafter called "Product" at LCP Transportation's bulk terminal facility.

WITNESSETH

For and in consideration of the terms and conditions herein set forth, the parties hereto agree as follows:

Equipment, Facilities & Services Provided

A. Terminal agrees to provide a building suitable for occupancy by customer for use in the following purposes:

1. General and administrative office
2. Conference/general purpose area
3. Spare parts for transportation and storage equipment
4. Fiberglass shed for the purpose of general preventive maintenance of approximately 6 tractors and 8 liquid trailers.
5. Land space for truck parking, equipment and storage tank(s).

B. Terminal agrees to provide suitable space for customer's storage tank and agrees to receive customer's product from railcar into storage tank and allow customer or customer's agent to redeliver product from storage tank to liquid trailer. All equipment owned by Customer shall be maintained by Customer. Both parties agree that all equipment shall be approved, inspected and tested, if necessary prior to its use.

Customer shall ensure that it's agents are properly trained and meet all regulations in respect to insurance requirements, proper equipment and product knowledge.

C. Terminal agrees to provide a 2 tank car loading ~~xxxxx~~ ^{area} for direct transfer from railcar to truck at terminal's designated transloading operations area.

Term

This contract is for an initial period of two (2) years beginning about April 1, 1988 and shall automatically continue thereafter for successive annual periods until terminated by either party by giving sixty (60) days notice.

Escalation

Rates in Schedule "A" may be adjusted at the end of the initial 2 year term. All rate adjustments will be negotiated in good faith. Terminal will provide customer a proposed revised Schedule "A" not less than 90 days prior to the end of the initial term.

Quality

Terminal will not be responsible for product quality. Customer providing storage tank, transfer equipment, railcars and trucks. Customer will be responsible for product assurance, loss or damage and Terminal represents only to provide terminal capabilities and services.

Title & Custody

Title to the product stored and/or handled hereunder shall always remain with customer. Terminal shall be deemed to have custody during the transfer from railcar to storage tank.

Inspection

Terminal's representative shall have the right at all times during normal hours of operation to visit and inspect Customer's facilities and operations described herein.

Taxes

Customer shall pay any and all taxes, charges and/or assessments on the product covered hereunder and on the storage, handling, transportation or use thereof which Terminal may be required to pay or collect under any Federal, State, County or Municipal law or authority now in effect or hereafter passed, except those taxes based on gross receipt or income of Terminal.

Failure to Perform Cancellation

The failure of either party to carry out the terms and conditions of this Agreement for a period of sixty (60) days after written notice of such failure or dereliction shall constitute good cause for immediate cancellation of this Agreement by the aggrieved party. The Agreement shall be governed by the laws of the State of New Jersey.

Product Measurement

Terminal agrees to provide weighing for all inbound trucks, heavy and light, and all outbound trucks, light and heavy, using a certified private scale. The cost of this service will be paid by Customer as set forth in Schedule "A" attached.

Hours of Operation

Terminal agrees to keep the facility available for receipt and/or redelivery of Customer's product via land-bound carriers on a 24 hour basis. Whenever Customer requests transfers at times other than the stated regular hours, Customer agrees to pay for such services at the agreed upon rate in Schedule "A".

Product Information and Safety

Prior to Customer's first inbound shipment; Customer shall provide Terminal a 24 hour contact list consisting of names, titles, offices and telephone numbers. Additionally, Customer shall provide product information, specifications, and recommended general handling procedures or guidelines.

Customer shall provide Terminal with any documentation necessary to ensure high quality safety procedures (i.e. MSDS and technical data sheets; emergency response information and spill or leak procedures.

Customer shall provide, when necessary, on-site training or written instructions in connection with rules and regulations describing packaging, disclosing, receiving, storing, handling, blending, shipping or disposing of the product, including waste.

Force Majeure

Except as hereafter set out and as otherwise provided for in the provision related to indemnification, neither party shall be liable to the other for loss, damage, or destruction of any kind whatsoever, or for any delay in or failure of performance of any act to be performed under this Agreement, resulting from acts of God, force majeure, or any other cause beyond the reasonable control and without the fault of the party claiming force majeure. At all times during the term hereunder, the foregoing provisions regarding force majeure to the contrary notwithstanding, Customer shall remain liable to Terminal for the rental and thruput charges set out in Schedule "A", attached; provided. However, that such liability shall be proportionately reduced during any time that Customer is denied the use of Terminal's facility by Terminal and such denial is not the fault of Customer.

Demurrage

Terminal agrees to assume liability for any demurrage on rail equipment which occurs directly as a result of Terminal's operation. Any demurrage accruing on rail or truck equipment through no fault of Terminal shall be paid by Customer.

in connection with Customer's operations

mmmm
PS

Clean-up Charges

At termination of Customer's usage of the tankage, reasonable and necessary clean-up costs will be charged to Customer.

Customer shall also be responsible for tank cleaning and residue/waste disposal.

Method of Payment

Terminal shall invoice Customer for the facilities and services rendered hereunder on a monthly basis. Customer shall pay Terminal the full amount of each invoice on or before the 20th ~~xxx~~ day following the receipt of such invoice. All amounts due and not paid within thirty (30) days from and after the ~~xxx~~ receipt of invoice shall bear interest at the rate of one and one-half percent (1.5%) per month for each month or portion of a month thereafter during which such amount remains unpaid.

Notices

Any notice by either party hereto to the other shall be in writing and be deemed to have been properly given if delivered personally, sent electronically (with receipt verification), or mailed, postage paid, to said party by certified mail (return receipt requested) addressed to such party at its address shown as follows, unless and until another address shall have been specified in writing by said party.

For LCP: LCP Transportation, Inc.
Raritan Plaza II, Raritan Plaza
CN #3106
Edison, NJ 08818

Attention: Manager, Transportation & Logistics

For Customer: Liquid Carbonic Carbon Dioxide Corp.
Meadowlands Corporate Center
1280 Wall Street West
Lyndhurst, NJ 07071

Assignment & Modification

This Agreement shall not be modified, assigned or changed except by written instrument executed by the duly authorized officers of the parties hereto.

Compliance with Laws & Regulations

Terminal accepts full and exclusive liability for the payment of any and all contributions or taxes for unemployment insurance or old age retirement benefits, pensions or annuities now or hereinafter imposed by any Federal or State governmental authority which are measured by wages, salaries or other remunerations paid to persons employed by Terminal on work performed hereunder, and shall indemnify and hold harmless Customer from any such liability. Terminal further agrees that in performing its duties in the operation and maintenance of said Facility, it will comply with all applicable Federal and State laws, orders and regulations, and warrants its facilities are in compliance with existing environmental and OSHA standards as regards to Customer's product.

If Terminal is required by the Federal, State or Local government, or other governmental agency to make any installations for preventing or reducing the emission into the atmosphere or environs of smoke, dust, fumes, vapors or other matters caused by Customer's product handled hereunder, Terminal shall make such installation and Customer agrees to reimburse Terminal at the actual cost thereof, provided, however, that Terminal shall have first notified Customer of the necessity and cost of such installation.

In the event that Customer considers the cost of such installation prohibitive, Customer shall have the right to cancel this Agreement subject to the payment of pro rata minimum thruput. Terminal shall indemnify and hold harmless Customer from and against any and all loss or damage which it may suffer or sustain in consequence of any failure of Terminal to comply with said laws, orders and regulations, except such that may arise through negligence of Customer, its agents, servants and employees, excluding Terminal, its agents, servants and employees.

Customer's Insurance & Liability

Customer shall provide on or before commencement date for the benefit of Terminal a Certificate of Insurance reflecting adequate coverage towards Workman's Compensation, general and product liability and comprehensive. Coverage for products and comprehensive liability will be no less than \$1MM.

Insurance, if any be desired by Customer on the Product or Customer's property, shall be carried by Customer at Customer's expense. If Customer carries any insurance on the product or Customer's property, Customer's insurance carrier shall endorse the policies to waive subrogation against Terminal. Copies of such waivers shall be furnished to Terminal upon request.

Customer shall reimburse Terminal for all expenses, damages, or fines incurred or suffered by Terminal by reason of any breach, violation or non-performance by Customer.

Indemnification

Customer shall indemnify Terminal and hold Terminal harmless for all losses incurred arising out of any spill, release or discharge of any Customer's product into the environment. Such liability shall include, but is not limited to any liability for property damage or personal injury to third parties, and any investigative and remedial costs imposed by federal, state or local law. This indemnification shall not include any spill, release or discharge caused solely by the negligence of Terminal, its agents, servants or employees. Customer further hereby agrees to indemnify, reimburse, defend and hold harmless Terminal and each parent, subsidiary and affiliate of Terminal, and including without limitation all officers, directors, employees and agents of Terminal (each an "Indemnified Party") for, from and against all demands, claims, actions or causes of action, assessments, losses, damages, liabilities of any kind whatsoever, costs and expenses, including, without limitation, interest, penalties, costs of defense, and reasonable attorneys' fees, disbursements and expenses, asserted against, resulting to, imposed upon or incurred by any Indemnified Party, directly or indirectly, by reason of or resulting from (i) a breach of any agreement, representation or warranty of Customer contained in or made pursuant to this Agreement, (ii) any actual or alleged pollution or threat to the environment that was caused or that arises out of or is related to events, conditions or circumstances that occur or exist on or after the date hereof and whether or not Customer or terminal had actual notice thereof, and are alleged to have been caused by the handling, transportation, treatment, storage, or disposal of any pollutant, contaminant, chemical, or industrial, toxic, or hazardous substance or waste, including product, stored, generated or produced in connection with Customer's management, use, control or operation of facilities provided pursuant to this Agreement, (iii) any non-compliance by Customer or any subsidiary thereof, on or after the date hereof, with the requirements of any environmental law, or with any permit, license, authorization, regulation, code, plan, order, decree, judgement, injunction, notice or demand letter issued, entered, promulgated or approved thereunder, and (iv) bodily injury, death or property damage, if and to the extent such demands, claims, actions or causes of action, assessment, losses, damages, liabilities, costs or expenses are caused, directly or indirectly, by the acts, omission or negligence of Customer, its affiliates or its agents or employees.

Independent Contractor

Terminal is acting hereunder and its services are rendered to Customer solely as an independent contractor, and Terminal is not authorized to represent or take any action in any way whatsoever for or on behalf of Customer. Customer hereby agrees to indemnify and hold Terminal harmless from any and all loss, claims, or damages of any kind or nature whatsoever arising out of or in connection when Customer or Customer's agent performing the transferring, packaging and/or loading of Customer's product at Terminal facility.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement on the date stated below.

LCP TRANSPORTATION, INC.

Phyllis J. Selge
Witness

By

Gregory L. Schultz
Gregory L. Schultz, Manager
Transportation & Logistics

Date

3/22/88

LIQUID CARBONIC CARBON DIOXIDE CORP.

Bruce P. Luthers
Witness

By

M M Munson

DATE

4-5-88



LCP CHEMICALS - NEW JERSEY
FOR
LIQUID CARBONIC CARBON DIOXIDE CORP.

April 1, 1988

SCHEDULE "A"
TO
TERMINAL SERVICE AGREEMENT

that customer has the right to install storage tanks at it's own expense

I. Tank Installation

Both parties have agreed ~~to install storage tank~~ not to exceed 300 tons including pipelines, pumps, etc. on Terminal site. ~~All installation costs (material and labor) will be reimbursed to Customer at actual costs plus 15%.~~ Land covered by separate land lease.

II. Office Space

Terminal shall provide and Customer shall occupy building for general office work, conference area, room to store parts inventory for transportation and storage equipment.

General dimension of office will be 25' x 50'. The area in fiberglass shed is available for general purpose vehicle maintenance. Any additional work required in shed will be at Customer's expense.

Customer has agreed to provide Terminal with a check in the amount of \$2,500 upon acceptance of contract for one month's security and first month's rent.

Terminal agrees to lease to Customer, premises within contractual term and Customer agrees to pay Terminal basic rental charges as described in this Schedule. Terminal or Terminal's representative reserve the right to enter into or upon the premises, or any thereof, at all reasonable hours or off-hours if Terminal deems necessary. Customer may make no alterations in or to premises without prior written consent from Terminal Manager.

Terminal shall be responsible for all structural repairs and shall maintain, repair and replace all plumbing, heating, electrical and mechanical fixtures (exclusive of starters, ballasts, bulbs, and lamps and electrical and mechanical fixtures installed by or for Customer) which shall be standard for the building, when required, and maintain and make repairs to the parking area and the exterior of the building.

On the termination date, or prior, Customer shall peaceably and quietly quit and surrender to Terminal the premises, broom clean, in as good condition as found. Ordinary wear and tear accepted.

III. Product

Carbon dioxide, refrigerated liquid, UN-2187 non-flammable gas.

IV. Charges

A. Building (25' x 50') @ \$12.00 sq. ft./yr. = \$15,000/Yr.

B. Parts room within building N/C

C. Fiberglass shed (33' x 40') N/C

D. Scale charge \$10.00/Truck
(\$5.00/weighing)

E. Terminal will install a meter to measure the electrical power to the refrigeration unit hooked up to storage tank(s) and will rebill Customer at the end of each month at Terminal's average electrical rate.

F. Transfer Rates: * (See below)

1. Rail to Truck

Terminal transfers \$0.20 CWT min.

\$55.00/Truck min.

Customer transfers \$0.10 CWT min.

\$40.00/Truck min.

2. Railcar to Storage Tank

Flat charge

\$140.00/Car

~~Guaranteed minimum throughput
charge through storage tank~~

~~\$25,000/Yr.~~

3. Storage Tank to Truck

Terminal transfers \$0.10 CWT min.

\$40.00/Truck min.

Customer transfers

N/C

V. Labor

Overtime charge

\$28.00/Hour

VI. Railcar Detention Charges

Private cars - per day

Free time

14 days

1st - 15th day

\$3.00/Day

Afterwards

\$5.00/Day

Maximum cars allowed on sight for Customer

10

* The parties agree that the guaranteed minimum charges for items F.1, F.2, and F.3 collectively will be \$25,000/Yr.

KLCD 11/17/98

PRAXAIR, INC.
Law Department
39 Old Ridgebury Road
Danbury, CT 06810-5113

Richard G. Tisch
Senior Group Counsel
Safety, Health & Environment

Telephone: (203) 837-2318
Facsimile: (203) 837-2515
(203) 837-2545

November 12, 1998

Muthu Sundram, Esq.
Assistant Regional Counsel
Office of Regional Counsel
New Jersey Superfund Branch
U.S. Environmental Protection Agency
290 Broadway, 17th Floor
New York, NY 10007-1866

Re: September 30, 1998 Notice Letter -
LCP Chemicals, Inc. Superfund Site

Dear Mr. Sundram:

This letter responds to Mr. Richard Caspe's September 28, 1998 Notice Letter to Mr. William Lichtenberger, CEO of Praxair, Inc.

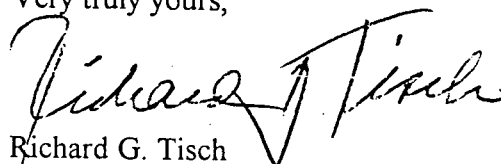
In a June 12, 1998 letter to Richard Ho, USEPA, Mr. Nicholas DiFranco responded to USEPA's May 14, 1998 information request to Liquid Carbonic Industries Corp. (LCIC), acquired by Praxair, Inc. in 1996. That response stated that LCIC had operated a carbon dioxide distribution terminal on leasehold property owned by LCP Chemicals, Inc. from April 1988 until October 1994. This response also stated that Praxair, Inc. has no knowledge of LCIC's purchase, generation, handling, use, storage, disposal, or handling of hazardous substances, hazardous wastes or CERCLA waste material at or from this leasehold.

In a May 5, 1998 letter to Richard Ho, USEPA, Mr. DiFranco responded to USEPA's February 27, 1998 information request to Praxair, Inc. He stated that Union Carbide's Linde Division operated a hydrogen filling and repackaging plant from 1957 to 1990 on leased property owned by LCP Chemicals, Inc. During dismantling of the hydrogen facility beginning in 1987, Union Carbide engaged in extensive investigation and remediation in accordance with the Environmental Cleanup Responsibility Act and the Industrial Site Recovery Act. Completion of the remedial activities by Praxair, Inc., which acquired Union Carbide's industrial gases business in a spin-off in 1992, was accomplished in 1995. After the expenditure of hundreds of thousands of dollars and several years of cleanup work by a subsidiary of Praxair, Inc., the New Jersey Department of Environmental Protection issued a No Further Action letter under ECRA/ISRA on June 20, 1995 to Linde Gases of the Mid-Atlantic, a wholly owned subsidiary of Praxair.

Muthu Sundram, Esq.
November 12, 1998
Page 2.

In consideration of the above circumstances, Praxair, Inc. believes it is not liable for any response actions at the LCP Chemicals, Inc. Superfund site and declines to finance or perform the Remedial Investigation or the Feasibility Study for the Site.

Very truly yours,

A handwritten signature in dark ink, appearing to read "Richard G. Tisch", written over a horizontal line.

Richard G. Tisch

cc: Ms. Patricia Simmons
Remedial Project Manager
Emergency and Remedial Response Division
United States Environmental Protection Agency
290 Broadway, 20th Floor
New York, NY 10007-1866

PRAXAIR, INC.

Industrial Highway

Nicholas A. DiFranco
Manager, Environmental Affairs

Keasbey, NJ 08832

Phone: (732) 738-4000
Fax: (732) 738-4011

June 12, 1998

Mr. Richard Ho
Emergency and Remedial Response Division
U.S. Environmental Protection Agency, Region II
290 Broadway, 19th Floor
New York, NY 10007

Re: LCP Chemical Site, Linden, New Jersey

Dear Mr. Ho:

This letter responds to Mr. Caspe's May 14, 1998 information request to Liquid Carbonic Industries Corp. regarding the LCP Site. We have answered the Agency's questions in the order they were presented.

1.
 - a. Praxair, Inc. (Praxair acquired Liquid Carbonic Industries Corp. in January 1996.)
 - b. Edgar G. Hotard, President.
 - c. Delaware. Agent for process is Corporation Service Company, 830 Bear Tavern Road, West Trenton, NJ 08628.
2. The facility had no RCRA permits nor RCRA I.D. to our knowledge.
3. Yes. Liquid Carbonic Carbon Dioxide Corporation, an affiliate of Liquid Carbonic Industries Corp., leased property at the foot of South Wood Avenue, Linden, NJ, from LCP Chemicals - New Jersey, a Division of Hanlin Group, Inc. from April 1, 1988 through March 31, 1996. However, operations ceased in October 1994. See Attachment 1 for a copy of the lease and a Terminal Service Agreement.
4. See answer to #3 above.

Mr. Richard Ho
June 12, 1998
Page 2.

5. The leased premises were used as a carbon dioxide distribution terminal (Terminal). See Exhibit A to the lease. Approximately 6-7 trucks were parked there. Bob Brown was the location manager at the time the facility closed. He is currently employed by Praxair, Inc. in Burlington, New Jersey as the facility manager. His telephone number is 609-387-0770. His predecessor was Richard Radcliff whose whereabouts is unknown. A dispatcher worked there for several years with Mr. Radcliff. There were no other employees stationed at the location although approximately 6 truck drivers operated out of the Terminal.
6. We are aware of none. The Terminal is not currently engaged in such practice.
7. We are aware of none.
8. We are aware of none.
9. We have none.
10. We are aware of none.
11. We are not aware that any person has knowledge of the facts to which this question refers.
12. We are aware of none.
13. We are unaware of any such documents.
14. We are unaware of any such insurance policy.
15. None filed for bankruptcy.
16. We are unaware of any information not likely to be known to the EPA.
17. See the May 5, 1998 response of Praxair, Inc. to EPA's request for information with respect to this Site.
18. Nicholas A. DiFranco, Manager, Environmental Affairs.
Praxair, Inc.
Industrial Highway
Keasbey, NJ 08832
(732) 738-4000, Ext. 200
I have no personal knowledge of the answers.

Mr. Richard Ho
June 12, 1998
Page 3.

19. Mr. Bob Brown
Facility Manager
Praxair, Inc.
Burlington, NJ
(609) 387-0770.

Mr. Brown assisted on all questions except #s 1, 13, 14, 15, 17, and 20.

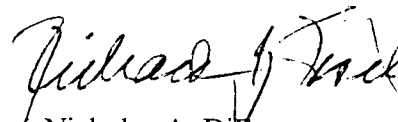
Richard A. Tisch
Senior Group Counsel
Praxair, Inc.
39 Old Ridgebury Road
Danbury, CT 06810-5113
(203) 837-2318
Mr. Tisch assisted on all questions.

Ms. Lynn Olson
Praxair, Inc.
175 East Park Drive
Tonawanda, NY 14151-0044
(716) 879-7322

Ms. Olson tried to provide assistance with respect to the information request, in general.

20. We decline to sign the Certification of Answers because EPA lacks authority under CERCLA to require that this certification be executed.

Very truly yours,


Nicholas A. DiFranco

*As
attorney-
in-fact
for*

cc: Richard G. Tisch, Esq. (w/att.)

EXHIBIT A

LIQUID CARBONIC
CARBON DIOXIDE CORPORATION

DRY ICE PLANT

P.O. BOX 130

BURLINGTON, NJ 08016



AREA CODE 609 - 387-0770

Fax # (609)387-8135

FAX FOR: BRIAN CURTIS

Date: _____

ENVIRONMENTAL/SAFETY

LOCATION: _____

FROM: BOB BROWN

LOCATION: BURLINGTON, NJ

Total Pages (Including Cover) 6

MESSAGE: SEE ATTACHED AGREEMENT & MAP

BLOG # 221 - WE LEASED 3/4 OF BLOG.

DOTTED AREA WAS OUR PARKING LOT.

STRIP AREA IN FRONT OF BLOG. # 220

WAS THE SCALE WE USED.

BB

STATE OF NEW JERSEY)
)
COUNT OF UNION)

LAND LEASE

THIS LEASE, made and entered into this 1st day of April, 1988, by and between LCP Chemicals - New Jersey, a Division of Hanlin Group, Inc., doing business at the Foot of South Wood Avenue, Linden, New Jersey, (hereinafter referred to as "Lessor") and Liquid Carbonic Carbon Dioxide Corporation, a Delaware Corporation, with offices at 1280 Wall Street West, Lyndhurst, New Jersey, 07071, (hereinafter referred to as "Liquid").

In consideration of the mutual covenants and agreements herein stated, Lessor hereby leases to Liquid and Liquid hereby leases from Lessor the premises identified herein, together with the appurtenances thereto, in accordance with the following provisions.

1. PREMISES

The Premises constitute a portion of the land with the building and other structures located at the Foot of South Wood Avenue in the City of Linden, State of New Jersey, as more particularly described in Exhibit "A", attached hereto and made a part hereof.

2. TERMINAL SERVICE AGREEMENT

Lessor and Liquid have simultaneously entered into a Terminal Service Agreement dated April 1, 1988 for a concurrent term. Said Terminal Service Agreement is to be the governing document and no part of this Lease will negate or supersede that Agreement.

3. USE

It is understood and agreed that the Premises are intended to be used for the operation of a carbon dioxide distribution terminal, and all related activities in conjunction therewith, to include rail services, as more specifically defined in that certain Terminal Service Agreement, by and between the parties of even date.

4. TERM

The term of this Lease shall be for a period of two (2) years commencing on the 1st day of April, 1988 and ending on the 30th day of March, 1990. The term shall automatically continue thereafter for successive annual period until terminated by either party by giving sixty (60) days notice providing the Terminal Service Agreement is also agreed upon.

5. RENT

Liquid covenants to pay to Lessor during the original term of this Lease annual rent equal to the sum of \$1/year. Remittance shall be made to the address provided for in the Notice section of this Lease.

6. RECORDING

Lessor and Liquid agree that this Lease, at the option of Liquid, may be recorded with the appropriate Recorder of Deeds in the applicable county.

7. NOTICES

All notices provided herein or which either party may elect to give to the other shall be in writing and shall be mailed by registered or certified mail, return receipt requested, and addressed as follows:

TO LESSOR:

Attention: Manager, Transportation & Logistics
LCP Transportation, Inc.
Raritan Plaza II, Raritan Center
CN #106
Edison, NJ 08818

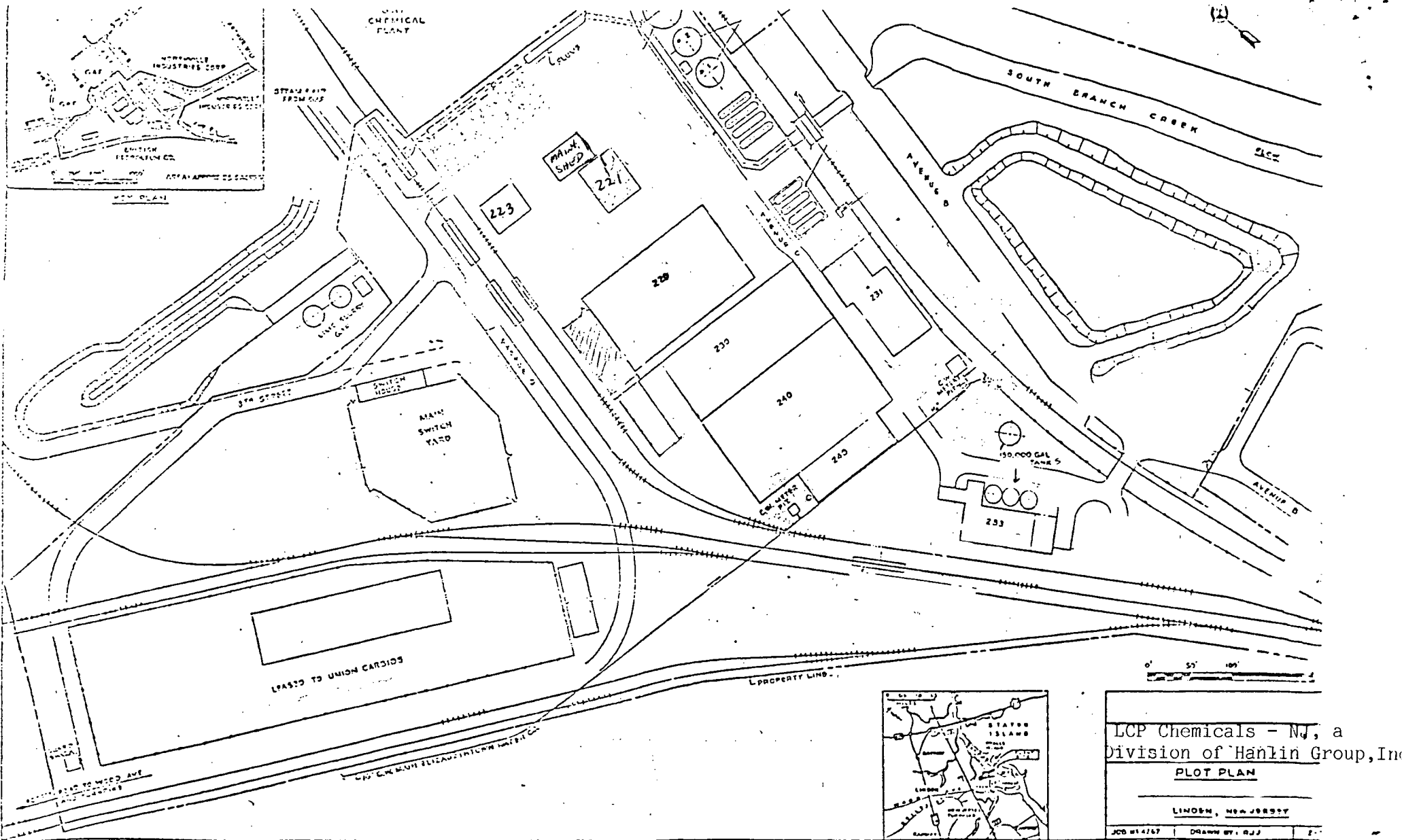
TO LIQUID:

Liquid Carbonic Carbon Dioxide Corporation
Attention: General Counsel
135 South LaSalle Street
Chicago, IL 60603

LESSOR: Anthony J. Scher
By Anthony J. Scher
Manager,
Title Transportation & Logistics
Witness Anthony J. Scher

By *S M M M M M M M M M*
Title *P. resident*
Witness *Brian P. Cuthbert*





LCP CHEMICALS - NEW JERSEY
a Division of Hanlin Group, Inc.



Liquid Carbonic Office and tractor/trailer parking area. Parking area subject to change.



Underlying land for storage tank(s).

MAY 29 1998

Mr. Richard G. Tisch
Senior Group Counsel
Praxair, Inc.
39 Old Ridgebury Road
Danbury, CT 06810-5113

Dear Mr. Tisch:

This letter is being sent to memorialize our May 28, 1998 conversation regarding EPA's Request for Information related to the LCP Chemical site (the Site) in Linden, NJ. The additional information regarding the nexus between Liquid Carbonic Industries Corporation and the Site should be submitted to EPA by June 12, 1998.

If you have additional questions regarding this matter, please contact me at (212) 637-3865.

Sincerely,

Patricia Simmons, Remedial Project manager
Emergency and Remedial Response Division

cc: Muthu Sundram, USEPA

PRAXAIR, INC.
Law Department
39 Old Ridgebury Road
Danbury, CT 06810-5113

Richard G. Tisch
Senior Group Counsel
Safety, Health & Environment

Telephone: (203) 837-2318
Facsimile: (203) 837-2515
(203) 837-2545

May 29, 1998

Ms. Patricia Simmons
Remedial Project Manager
Emergency and Remedial Response Division
U.S. Environmental Protection Agency
290 Broadway, 20th Floor
New York, NY 10007

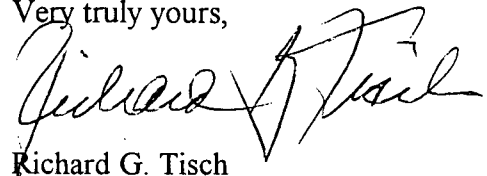
Re: LCP Chemical Site
Linden, New Jersey

Dear Ms. Simmons:

This confirms our conversation on Thursday, May 28, and replies to Mr. Caspe's May 14, 1998 letter addressed to "Mr. Edgar Hotard, President, Liquid Carbonic Industries Corp." As I mentioned to you on the telephone, Praxair, Inc. acquired Liquid Carbonic and its subsidiaries in January 1996 and the domestic parent company, Liquid Carbonic Industries Corporation, merged into Praxair, Inc. in 1997.

Thank you for the additional time to respond to the Agency's information request regarding the alleged nexus of former Liquid Carbonic operations to the LCP Chemical Site. Praxair, Inc. will respond by Friday, June 12, to the request.

Very truly yours,

A handwritten signature in dark ink, appearing to read "Richard G. Tisch", is written over a horizontal line.

Richard G. Tisch

RGT/jm

PRAXAIR

isch, Esq. - M1
E.
ebury Road
T 06810-5113

Ms. Patricia Simmons
Remedial Project Manager
Emergency and Remedial Response Division
U.S. Environmental Protection Agency
290 Broadway, 20th Floor
New York, NY 10007

10007-1866-14





Praxair, Inc.
Industrial Avenue
P. O. Box 237
Keasbey, NJ 08832
Tel (732) 738-4000
Fax (732) 738-9586

May 5, 1998

VIA OVERNIGHT MAIL

Mr. Richard Ho
Emergency and Remedial Response Division
U.S. Environmental Protection Agency
290 Broadway, 19th Floor
New York, NY 10007

Re: LCP Chemical Site, Linden, New Jersey

Dear Mr. Ho:

This responds to Mr. Richard Caspe's February 27, 1998 Request for Information regarding the LCP Chemical Site. We appreciate the extension of time to respond until May 5 provided by Muthu Sundram, Esq.

We have answered the Request questions in the same order as the Request presented them.

1.
 - a. Praxair, Inc.
 - b. Edgar G. Hotard, President
 - c. Delaware. Agent for process is Corporation Service Company,
830 Bear Tavern Road, West Trenton, NJ 08628.
2. The facility had no RCRA permits. The facility had EPA ID# NJD011392735.
3. See answer #3 in Union Carbide Corporation's April 8, 1998 letter from Roger Florio to Richard Ho. Available leases are enclosed. Other leases were apparently purged from corporate records.
4. See the Union Carbide letter and the leases referred to in answer 3 above as well as other attachments.

5. Union Carbide Corp. Linde Division (UCC) operated the Linden, NJ facility as a hydrogen filling and repackaging plant from 1957 to 1990. In January 1989, Union Carbide transferred the assets of the industrial gas operations to a wholly-owned subsidiary, Linde Gases of the Mid-Atlantic. The operations did not change and continued until the facility was decommissioned later in that year.

Hydrogen gas was delivered to the facility by pipeline from Linden Chlorine Products (LCP). The hydrogen was purified by use of traps to remove mercury, which was transferred from LCP with the hydrogen. UCC did not request or want the mercury. LCP stopped supplying pipeline hydrogen in late 1980. At that time an 18,000 gallon hydrogen storage tank was installed on the property and liquid cryogenic hydrogen was delivered to the site by trailer. The liquid hydrogen was vaporized to its gaseous form and pumped by compressor through the purification system into DOT approved cylinders and tube trailers for delivery to customers. The product was analyzed for conformance with customer or sales specifications. Mixture of hydrogen and nitrogen or hydrogen and argon were also made upon customer request. In July 1988 the purification system was removed and the hydrogen was pumped by either the compressor or a high pressure pump.

Cylinder maintenance activities included the hydrostatic testing of cylinders in compliance with DOT cylinder specifications, valve removal, replacement and repair, internal and external cylinder wash and paint stripping, brush and/or roller painting of cylinders as needed.

Plant maintenance activities included the periodic dismantling and reassembly of the compressors to replace broken or worn parts, changing lubricating oil on the compressor and vacuum pumps, and welding, cutting, and brazing of cylinder filling manifolds and equipment.

Plant process equipment included three compressors, a gas holder, a purification system consisting of an oxygen removal unit, a hydrocarbon removal unit, dryers and a mercury trap, a small cooling tower for the recirculation of non-contact cooling water for the compressors, and an oily water separator.

Up until 1974 the facility also had a garage for the maintenance and repair of vehicles. Garage operations would have included changing engine oil, tire and brake maintenance, and minor engine repair.

The plant was manned by a supervisor who managed 3-4 employees. See the response to question 11 for names of management personnel.

6. Yes. No, the facility officially ceased operations on June 15, 1990.

We have answered the following questions a through c, although, since we answered the preceding question "No", we were apparently not required to answer them.

- a)
- | | |
|---------------------------|---------------------|
| Paint and paint thinners | 1957 to 1990 |
| Asbestos | 1957 to 1990 |
| Water treatment chemicals | 1957 to 1990 |
| <u>Mercury</u> | <u>1957 to 1990</u> |
| Sodium metasilicate | 1957 to 1990 |
| Diesel fuel | 1957 to 1990 |
| Compressor oil | 1957 to 1990 |
| Vacuum pump oil | 1957 to 1990 |
| Motor oil | 1957 to 1974 |
| Hydrogen | 1957 to 1990 |
| Nitrogen | 1957 to 1990 |
- b)
- Paint and paint thinners were used for cylinder maintenance activities.
Asbestos used as pipe insulation and divider wall (transite board).
Water treatment chemicals (caustic #2-L and Brocide formula 32 produced by Garrett-Callahan) were used for efficient maintenance and operations of the cooling tower.
Diesel fuel used as vehicle fuel.
Mercury was a contaminant in the product stream from LCP and was removed by Union Carbide.
Sodium metasilicate was used as a cylinder wash agent by dissolving it in hot water.
Compressor oil was used for lubrication purposes.
Vacuum pump oil was used for pump operation.
Motor oil was used for lubrication purposes.
Hydrogen and nitrogen were products sold to customers.
- c)
- Paint and thinner were used in quantities of ~100 gal. and ~60 gal., respectively, on an annual basis.
Water treatment chemicals were used in quantities of ~250 gal. annually.
Mercury was collected from the knockout trap in quantities of ~5 pounds daily up to 1981 when the pipeline supply of product from LCP ceased. It was collected in diminishing quantities thereafter while the trap was in service.

Compressor oil was used in quantities of ~110 gal. annually.
Use of vacuum pump oil was less than 5 gal. annually.
The quantity of motor oil used is not known. Use terminated in 1974
when garage operations ceased.

7. Paint and paint thinners were stored in 1 gal. and 5 gal. containers in a metal flammables cabinet. The paint and thinner were used to extinction.

Water treatment chemicals were stored in 55 gal. drums inside the plant. The chemicals were used to extinction.

The mercury collected from the trap was taken each day by the employees and sold by them until 1988. After 1988 recoverable mercury collected from the facility was manifested to a commercial recycler/reclaimer (Bethlehem Apparatus). Mercury in soil or other materials were disposed of at SCA Chemical Services. See #10.

Sodium metasilicate pellets were stored in 50 lb. paper bags or fiber drums depending on the amount purchased. The pellets were mixed with hot water to form the cleaning solution. After use the cleaning solution was discharged through a floor drain to GAF treatment works. GAF was a neighbor.

Used oil was collected in drums and stored outside the eastern side of the plant. Prior to 1981 a 275 gal. above-ground storage tank was installed for the collection of used oil. Drums continued to be used for the collection of oil as well. The oil would be picked up periodically by a recycler.

8. There were no lagoons or impoundments on the property. A 275 gal. above-ground tank was used for the collection and temporary storage of used oil.
 - a. The tank was installed prior to 1981. The exact date is not known.
 - b. The tank was used to collect and store used compressor and vacuum pump oil.
 - c. The tank was used to collect and store used compressor and vacuum pump oil.
 - d. The tank was taken out of service and removed from the facility when the plant ceased operation in 1990.
9. Documents are enclosed.

10. In June 1987 the decision was made to decommission and dismantle certain idle process equipment including two compressors, the gas purification equipment, and the gas holder and related piping from the gas supply pipeline from LCP. In the course of this decommissioning and dismantlement, quantities of waste material contaminated with mercury were generated. Work also included the removal of most of the building roof which was also found to be contaminated with mercury. Waste materials from this activity were disposed of at SCA Chemical Services at Model City, NY. Free mercury collected from these activities was collected and manifested to Bethlehem Apparatus in Hellertown, PA.

On October 19, 1987 a report of soil contamination from the historic release of used oil was made to the N.J.D.E.P. IT Corp. was contracted by Union Carbide to conduct the cleanup at the site. The affected area was excavated and backfilled with clean fill material. The oil and mercury contaminated soil was transported to Envirosafe Services of Ohio, Oregon, OH. The N.J.D.E.P. has approved the actions taken by UCC.

The cessation of operations in June 1990 triggered the New Jersey Environmental Cleanup Responsibility Act (ECRA) requirements for site evaluation and remediation. In the course of compliance with the ECRA and the Industrial Site Recovery Act (ISRA), quantities of waste material contaminated with mercury, other heavy metals, and contaminants were generated over the course of remediation activities which lasted five years. The waste generation and disposal records from these activities are found in the ISRA files for case number 90367 in the N.J.D.E.P. offices in Trenton, NJ. The N.J.D.E.P. issued a No Further Action letter to Linde Gases of the Mid-Atlantic on June 20, 1995 indicating satisfactory completion of the ECRA/ISRA requirements.

11. Nicholas A. DiFranco, 47 Chestnut Drive, Matawan, NJ 07747.
Phone: 732-566-1838. Manager, Environmental Affairs. Beginning in 1992 managed the ECRA/ISRA process for plant decommissioning.

Fred Galvan, 12117 Shady Forest Drive, Riverview, FL 33568.
Phone: 813-677-2371. Assistant Region Manager, Eastern Region, Linde Division

John Crane, RD#1, Box 458, Van Sickle Road, Augusta, NJ 07822. Phone: 201-383-0685. Linde Plant Manager.

Mr. Richard Ho
May 5, 1998
Page 6.

- Yahya Bashir, Retired, Linden Plant Supervisor.
 - IT Corporation, 200 Cottontail Lane, Somerset, NJ 08873-1248.
Phone: 732-469-5599. Environmental Consultant which conducted the site cleanup and ECRA/ISRA process.
 - Richard G. Tisch, Senior Group Counsel, Praxair, Inc.,
39 Old Ridgebury Road, Danbury, CT 06810-5113.
Phone: 203-837-2318.
12. See the attached documents.
13. I am not aware of any.
14. We are uncertain of the answer to this question and are reviewing available records.
15. None of the business entities listed in response to question 4 filed for bankruptcy.
16. In the course of conduct of ISRA case 90367 by Linde Gases of the Mid-Atlantic, the New Jersey Department of Environmental Protection (NJDEP) alleged that heavy metal contamination found in the soils on the Linde leasehold was the consequence of site operations. Linde responded to this allegation, in part, by conducting a limited review of the DEP's own files. The results of this review are compiled in a September 30, 1992 letter from Mr. Nicholas A. DiFranco to Mr. Joseph Goliszewski, the ISRA case manager (document enclosed). In summary, the findings of this file review indicated that metals contamination at the LCP Chemical site (in its entirety) was due to fill placed on the site long before Union Carbide's tenancy on the property, and the operations conducted on the UCC leasehold were unrelated in any way to then existing heavy metals contamination. The UCC review concluded -- and was not rebutted by NJDEP -- that the UCC operations did not generate any heavy metals on the UCC leasehold or elsewhere on the LCP Chemical site except for the mercury contamination sent by LCP Chemical with the hydrogen to UCC.

Since 1919 GAF Chemicals Corporation and its predecessors have owned a 125 acre chemical manufacturing site adjacent to LCP Chemical. Fill material on the chemical site is believed to have been taken from the GAF site. See Exhibit 5 of Nick DiFranco's September 30, 1992 letter to Joseph Goliszewski, NJDEP, attached hereto.

Mr. Richard Ho
May 5, 1998
Page 7.

17. We have been unable to locate any relevant documents except for those enclosed.
18. Nicholas A. DiFranco, 47 Chestnut Drive, Matawan, NJ 07748, 732-566-1838, Manager, Environmental Affairs, Praxair, Inc., has personal knowledge of the answers.
19. John Crane, Richard Tisch.

Note: NJDEP has voluminous files with respect to Union Carbide's tenancy and the extensive remediation performed by UCC, and we urge the EPA to consult with the NJDEP and review its files.

20. We have not signed the Certification of Answers because EPA lacks legal authority under CERCLA to require that this certification be executed.

Very truly yours,



Nicholas A. DiFranco

cc: Richard G. Tisch, Esq. (w/att.)
Roger Florio, Esq., Union Carbide, (w/o att.)

linden2.sam/rgt

PRAXAIR, INC.

Industrial Avenue, Keasbey, NJ 08832

Linde Division

Telephone: (908) 738-4000

September 30, 1992

Mr. Joseph Goliszewski
New Jersey Department of Environmental Protection and Energy
Division of Responsible Party Site Remediation
Bureau of Environmental Evaluation and Cleanup Responsibility
Assessment
401 E. State Street - 5th Floor
Trenton, New Jersey 08625-0028

RE: Linde Gases of the Mid-Atlantic, Inc. Linden Facility;
ECRA Case
Number 90367

Dear Mr. Goliszewski:

As you know, Linde Gases of the Mid-Atlantic, Inc. (Linde Gases), a subsidiary of Praxair, Inc. (Praxair), was formerly a tenant at the above-referenced facility, which is located in Linden, New Jersey.¹ The facility is not and was never owned by Praxair. Rather, during the entire tenancy of Linde Gases the facility was owned by LCP Chemicals, a Division of Hanlin Group, Inc. (LCP). Praxair has not been a tenant at the facility for more than two years. ECRA Case Number 90367 stems from the termination of the Linde Gases lease in 1990.

The remedial investigations conducted to date at the Linden facility have determined that much of the surficial soils on the former leasehold are composed of a black cinder material that contains elevated levels of certain heavy metals. Further investigations of the activities and disposal practices of both the prior tenants and owners of the property have produced clear evidence that the source of the cinder fill and the heavy metals at the Linde Gases facility is solely the result of the activities of these property owners and prior tenants. None of the elevated levels of heavy metals is related in any way to the Linde Gases tenancy. Moreover, the heavy metals appear to be a function of the fill material which is ubiquitous throughout the area. In addition, there is conclusive evidence concerning the origin of the arsenic present in the surficial aquifer underlying the site. The following discussion presents documentation uncovered to date from a limited review of NJDEPE files regarding responsibility for both areas of concern. Praxair's investigation is ongoing; consequently, this letter may be supplemented as appropriate when new information is obtained.

¹ See Exhibit 1 - Site Location Map.

Cinder Fill Material and Metals Contamination

There is a large body of evidence regarding the origin of the black cinder fill material in this area, which has been the site of numerous industrial operations since 1885.² A review of NJDEPE's files points to GAF, the former owner and current neighbor of the property at issue, as the source of the fill and metal contamination. Production at the neighboring GAF Chemicals facility, which has included the manufacture of surfactants, dyestuffs, pigments, industrial chemicals and metal specialty products, started in 1919.³

The documentation in NJDEPE's files demonstrates quite clearly that the entire area is filled. Exhibit 2 is a 1982 memorandum from Walter Olenick of the NJDEPE to Scott Santora stating that sections of the GAF facility were "constructed on pilings over an area filled with cinders from their coal burning facilities." This statement is corroborated by the RCRA Facility Assessment for GAF.⁴ Exhibit 3, an undated handwritten geological cross-section prepared by Jill Monroe of NJDEPE, provides further evidence that a large amount of fill overlies the area.

In Exhibit 5, a more detailed description of the soil profile is given, noting that the "site has been reclaimed from tidal marshes by the placement of 5 to 10 feet of fill."⁵ The report states that "Hazardous Waste Management practices over the past 100 years at GAF has lead [sic] to widespread contamination", noting the use of an open ditch system for disposal of hazardous materials, and concluding that "fill material may have been contaminated prior to emplacement."⁶ Soil samples collected by NJDEPE at the GAF Facility in 1988 contained metals.⁷ Moreover, Exhibit 5 documents that GAF production buildings located just to the east of the former Linde Gases leasehold were used for processes involving metals. Building 200 housed carbonyl iron powder production, while buildings 303 through 306 housed ethylene oxide production utilizing silver as a catalyst.⁸

A 1982 Geraghty & Miller report for LCP also confirms the ubiquitous presence of "miscellaneous fill deposits" ranging in depth from 4.5 feet to 13.5 feet covering the study area (which is located on the same lot & block as the former Linde Gases Facility) "continuously"

² Exhibit 5 at p. 1.

³ Id.

⁴ Exhibit 4 at p. 2.

⁵ Exhibit 5 at p. 3.

⁶ Exhibit 5 at p. 5.

⁷ Id.

⁸ Exhibit 5 at p. 43.

and contain "slag, crushed stone, and brick."⁹ The report opines that this fill was in place before LCP occupied the site, and states that soil boring records from Hazen and Stewart (1969) demonstrate that fill coverage is "extensive."¹⁰ The report found that the metals contamination in the surficial soils decreased with depth, and that the ground water was essentially free from mercury, the metal targeted in the report.¹¹ Jill Monroe, NJDEPE Geologist and author of the soil profile sketch found in Exhibit 3, reported in a memorandum to Brian Crisafulli that the surficial layer at the LCP site consists of 10 to 15 feet heterogenous fill which includes "brick and slag."¹²

Obviously, fill is ubiquitous in the entire area surrounding the leasehold. Just as obviously, the fill was in place long before Linde Gases became a tenant. Finally, the documentation in NJDEPE files and the detailed information available concerning the operations of Linde Gases discloses that the elevated metal readings found in the leasehold are due to the fill placed there long before Linde Gases leased the premises, and has nothing whatsoever to do with the operations of Linde Gases.

Arsenic Contamination in the Surficial Aquifer

The discharge by GAF of arsenic acid solutions to the low lying areas of the GAF facility is well documented. A 1982 NJDEPE Memorandum contains a detailed narrative description of the GAF practice of discharging arsenical liquid wastes to low lying, marshy areas.¹³ The EPA Preliminary Assessment for RCRA Corrective Action Program further substantiates this direct discharge of arsenic acid to an area referred to as the "Drum Landfill."¹⁴ Page 2 of Exhibit 4, which is an excerpt from the RCRA Facility Assessment conducted by NUS at GAF, also discusses GAF's generation of arsenic wastes.

Exhibit 8 concludes that arsenic found in groundwater at the LCP site is "due to an outside source of contamination."¹⁵ This conclusion is based on the "relatively invariant contaminant concentrations" and

⁹ Exhibit 7 at p. 8. LCP purchased the chlorine production facility from GAF in 1971 and operated it until 1985. GAF had operated this facility from 1955 to 1971.

¹⁰ Id. at 9.

¹¹ Exhibit 7 at p.11. Mercury was targeted because metallic mercury was used in the LCP chlorine production process.

¹² Exhibit 9 at p. 3.

¹³ Exhibit 2.

¹⁴ Exhibit 6 at pp. 2, 4, 5.

¹⁵ Exhibit 8 at p. 5.

LCP's claim that it did not use arsenic in its production processes.¹⁶ In Exhibit 9, an NJDEPE Memorandum, Jill Monroe reports that groundwater sampling results from 1982 to 1987 evidenced arsenic contamination. A 1989 Geraghty & Miller report confirms this conclusion that the arsenic contamination represents "background conditions in the Arthur Kill rather than contamination resulting from the LCP Facility."¹⁷

Conclusion

NJDEPE is required, pursuant to NJSA 13:1K-10(a), to take into consideration "the location of the site and surrounding ambient conditions" in establishing minimum criteria for soil, groundwater and surface water quality. The facility formerly leased by Linde Gases is located in a Tidal Marsh area where groundwater is saline and tidally influenced.¹⁸ The area is zoned heavy industrial and has been used for a wide variety of industrial operations for more than one hundred years. Historical waste management facilities in this area contributed to widespread contamination.¹⁹ As the foregoing discussion demonstrates, there is ample evidence that both the metals contaminated fill and arsenic contaminated groundwater predated Linde Gases' tenancy. Any number of historical production processes could have created these conditions. Conversely, nothing in the Linde Gases operation involved the heavy metals found in the surficial soils at various locations in and around the site. The operation was merely a hydrogen gas repackaging operation.²⁰ Elevated levels of zinc, arsenic, copper, and lead were found throughout the fill material. NJDEPE has, however, in the past questioned whether the metals contamination in a function of the fill material. Praxair's further investigation reveals that metals contamination is likely to be found throughout the heterogeneous fill, not just in the cinder - type fill, given the historical waste management practices at this and neighboring properties. These metals, while ubiquitous at the site, do not appear to be leaching from the surficial fill. Further, as noted above, the arsenic in the groundwater appear to stem from contamination from neighboring facilities and are influenced by the tidal action occurring in the surficial aquifer.

Linde Gases, merely a former tenant at the Linden facility, was not the source of the contamination found in either the surficial fill or in the groundwater. Rather, this contamination is area-wide and pre-dates by many years the Linde Gases tenancy. Under these circumstances, we believe that a no further action proposal is an appropriate and

¹⁶ Id.

¹⁷ Exhibit 10 at p. 7.

¹⁸ Exhibit 5 at p. 3

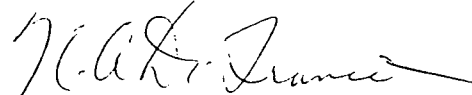
¹⁹ Exhibit 5 at p. 5.

²⁰ Exhibit 11.

Mr. Joseph Goliszewski
September 30, 1992
Page 5

reasonable measure regarding the facility. This is especially true because Linde Gases is not and had never been the owner of the facility in question. It is difficult to understand why a tenant should be responsible for the remediation of background contamination for which it has no responsibility whatsoever. We would request prompt confirmation that our no further action proposal is acceptable to the Department under these circumstances.

Very Truly Yours,

A handwritten signature in dark ink, appearing to read "N. A. DiFranco", with a long horizontal flourish extending to the right.

N. A. DiFranco
Manager, Environmental Affairs

Attachments

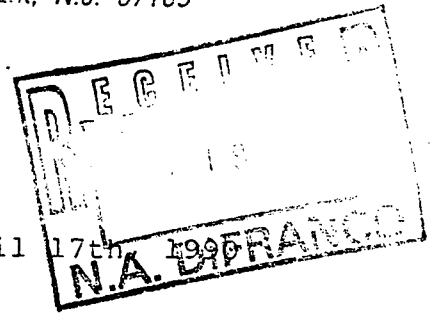
cc: Richard G. Tisch, Esquire
William L. Warren, Esquire

EXHIBITS

- Exhibit 1 - Site Location Map
- Exhibit 2 - Memorandum from Walter Olenick to Scott Santora, NJDEP, RE GAF - Linden, dated 1/13/82
- Exhibit 3 - Hand drawn Soil Profile by Jill Monroe, undated
- Exhibit 4 - RCRA Facility Assessment (RFA), undated
- Exhibit 5 - GAF Chemicals Corporation EDPA ID# NJD002185973, Undated
- Exhibit 6 - Preliminary Assessment for RCRA Corrective Action Program - GAF Linden, Undated
- Exhibit 7 - Waste Lagoon Ground-Water Monitoring - LCP Chemicals, Geraghty & Miller, February 1982
- Exhibit 8 - LCP Chemicals EDP ID# NJD079303020 Undated
- Exhibit 9 - Memorandum from Jill Monroe through Tracy Wagner to Brian Crisafulli RE CME for LCP Chemicals, Undated
- Exhibit 10 - Results of the July/August 1988 Ground-Water Sampling Program - LCP Chemicals, Geraghty & Miller, January 1989
- Exhibit 11- Attachment #1 (Past Operations), to Linde Gases of The Mid Atlantic's Site Evaluation Submission dated June 6, 1990.

LINDE GASES
OF THE MID-ATLANTIC

360 Avenue P
Newark, N.J. 07105



To: Carl Koch

Date: April 17th, 1990

cc: John Nastasi
Nick Di Franco
Randy O'Neal


Subject: Employee Notification

On April 17th, 1990, the Linden Plant employees were notified of the closing date of that operation.

This notification conforms with the "Minimum Notification" of 60 days, as required in the employee communication of January 1990.

The last day worked then becomes June 15th, 1990.

The three employees affected are E. Grzybowski, O. Montoya, and G. Salazar.


John R. Crane
Operations Manager

LINDE GASES

OF THE
MID-ATLANTIC, INC.

308 Harper Drive
Moorestown, NJ 08057
(609) 778-6200

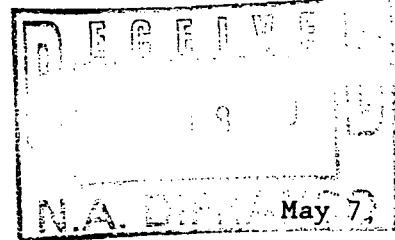
FILE LINDEN

LINDE

RECEIVED

MAY 18 1990

UNION CARBIDE CORP.
SAFETY/HEALTH OFFICE
PO BOX 1177
ALLENTOWN, PA 18106



New Jersey Department of Environmental Protections
Division of Hazardous Waste Management
401 East State Street - Fifth Floor
CN 028
Trenton, New Jersey 08625

Attention: Manifest Section - Annual Reports

RE: Annual Waste Generator Report for EPA I.D. No. NJD011392735

Dear Sirs:

Please find enclosed the 1989 Annual Waste Generator Report for our facility located at Foot of South Wood Avenue in Linden, New Jersey. Also, enclosed is a check in the amount of \$200.00 to cover the associated reporting fee. I trust you'll find the report consistent with your requirements. Should you have any questions and/or require additional information, please contact me at the above address and/or (609) 778-6338.

Very truly yours,

R.A. O'Neal
Environmental Coordinator
Package Gases and Distributors

RAON:sg
Enclosures

cc: Y. Bashir
J.R. Crane
N.A. DiFranco
C.R. Koch

GAS TECHNICS
5 Iron Horse Road
Oakland, NJ 07436
(201) 337-7003

LINDE GASES OF BALTIMORE
1400 Benson Court
Baltimore, MD 21227
(301) 242-0345

BELCO
5303 46th Avenue
Hyattsville, MD 20781
(301) 779-6300

HAMPTON ROADS WELDERS SUPPLY
3450 Virginia Beach Boulevard
Norfolk, VA 23502
(804) 380-8405

GAS TECHNICS
2300 East Church Street
Philadelphia, PA 19124
(215) 533-1722

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
HAZARDOUS WASTE GENERATOR ANNUAL REPORT 1989
CERTIFICATION FORM

ITEM 1 USEPA Identification Number: NJD011392735

ITEM 2 Generator (Company) Name: LINDE GASES OF THE MID-ATLANTIC, INC.

ITEM 3 Contact Person: Y. Bashir

ITEM 4 Phone Number: (201) 862-2422

ITEM 5 Certification:

I certify that the information given in this annual report is true, accurate and complete.

Yousuf Bashir
(Print or type name)

Yousuf Bashir
(Signature)

5/7/90
(Date)

ITEM 6

- A ☐ This site (company) generated less than 1.33 tons of hazardous waste for the calendar year 1989 (No Fee)
- B ☒ This site (company) generated greater than 1.33 tons of hazardous waste but less than 10 tons of hazardous waste during the calendar year 1989 (Fee \$200)
- C ☐ This site (company) generated greater than 10 tons of hazardous but less than 100 tons of hazardous waste during the calendar year (Fee \$300)
- D ☐ This site (company) generated greater than 100 tons of hazardous waste during the calendar year (Fee \$400)

ITEM 7 Federal Vendor Identification Number
13-2875638

* Please submit check with your completed report.

**NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
HAZARDOUS WASTE GENERATOR ANNUAL REPORT 1989
-REPORT FORM-**

1. Generator Name LINDE GASES OF THE MID-ATLANTIC, INC.
2. USEPA ID Number NJD011392735
3. Site Address Foot of South Wood Avenue
Linden, NJ 07036
4. Transporter Name IT Corporation
5. Transporter USEPA ID Number NJD986568574
6. TSD Facility Name Chemical Waste Management of New Jersey, Inc.
7. TSD Facility EPA ID Number NJD089216790
8. TSD Address 100 Lister Avenue
Newark, NJ 07105

9.	Waste	Waste	DOT Haz	Total	
A.) <u>Number</u>	B.) <u>Description</u>	C.) <u>Class</u>	D.) <u>Quantity</u>	E.) <u>Units</u>	
(I)	(11)	(11 or J)	(13)	(14)	
D009	RQ Hazardous Waste Solid, N.O.S. (Mercury Contaminated Debris)	ORM-E (NA9189)	2400	Pounds	
X726	Waste Combustible Liquid, N.O.S.	Combustible Liquid (NA1993)	119	Gallons	

NOTE: For each combination of transporter and treatment, storage and disposal facility (TSDF), list the TOTAL quantity manifested for each waste type

**NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
HAZARDOUS WASTE GENERATOR ANNUAL REPORT 1989
-REPORT FORM-**

1. Generator Name
Linde Gases of The Mid-Atlantic, Inc.
2. USEPA ID Number
NJD011392735
3. Site Address
Foot of South Wood Avenue
Linden, NJ 07036
4. Transporter Name
#1- Chemical Waste Management of New Jersey, Inc.
#2- Price Trucking Corp.
5. Transporter USEPA ID Number
#1 - ILD099202681
#2 - NYD046765574
6. TSD Facility Name
Chemical Waste Management, Inc. (Emelle Facility)
7. TSD Facility EPA ID Number
ALD000622464
8. TSD Address
Alabama Highway 17 at Mile Marker 163
Emelle, Alabama 35459

9.	Waste	Waste	DOT Haz	Total	
A.) <u>Number</u>	B.) <u>Description</u>	C.) <u>Class</u>	D.) <u>Quantity</u>	E.) <u>Units</u>	
(I)	(11)	(11 or J)	(13)	(14)	
X726	Waste Combustible Liquid, N.O.S.	Combustible Liquid (NA1993)	330	Gallons	

NOTE: For each combination of transporter and treatment, storage and disposal facility (TSDF), list the TOTAL quantity manifested for each waste type

**NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
HAZARDOUS WASTE GENERATOR ANNUAL REPORT 1989
-REPORT FORM-**

1. Generator Name LINDE GASES OF THE MID-ATLANTIC, INC.
2. USEPA ID Number NJD011392735
3. Site Address Foot of South Wood Avenue
Linden, NJ 07036
4. Transporter Name Chemical Waste Management of New Jersey, Inc.
5. Transporter USEPA ID Number ILD099202681
6. TSD Facility Name Chemical Waste Management of New Jersey, Inc.
7. TSD Facility EPA ID Number NJD089216790
8. TSD Address 100 Lister Avenue
Newark, NJ 07105

9.	Waste A.) <u>Number</u> (I)	Waste B.) <u>Description</u> (11)	DOT Haz C.) <u>Class</u> (11 or J)	Total D.) <u>Quantity</u> (13)	E.) <u>Units</u> (14)
	D002	RQ Waste Alkaline Liquid, N.O.S.	Corrosive Material (UN1719)	85	Gallons

NOTE: For each combination of transporter and treatment, storage and disposal facility (TSDF), list the TOTAL quantity manifested for each waste type

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
HAZARDOUS WASTE GENERATOR ANNUAL REPORT 1989
WASTE SUMMARY FORM

Generator (Company) Name

Linde Gases of The Mid-Atlantic, Inc.

US EPA ID Number

NJD011392735

Directions

Please indicate below the total quantity of hazardous waste manifested during the 1989 report year for each unit of measure. Enter the units of measure as they appeared in item #14 of the manifest. Do not convert one form of unit of measure to another.

534

G - Gallons (liquids only)

2400

P - Pounds

T - Tons

Y - Cubic Yards

L - Liters (Liquids only)

K - Kilograms

UNION CARBIDE CORPORATION
Linde Division

39 Old Ridgebury Road
Danbury, CT 06817-0001

OCT 28 1988

UNION CARBIDE CORP.
SOUTHERN REGIONAL OFFICE
DANBURY, CT

*File
LINDEN*

RECEIVED

October 27, 1988

TO: R.G. Tisch

CC: N.A. DiFranco
R.J. Gavin
L.E. Barron

Attached please find a copy of a letter I received today from Peter D. Moore in reference to our ECRA Applicability Determination Application.

If you have any questions please call.

V.A. Smith
V.A. Smith *QRS*

VAS/jrs
attachment

LCP CHEMICALS
A Division of Hanlin Group, Inc.

Raritan Plaza II • Raritan Center • CN #2108 • Edison, NJ 08818 • (201) 228-4840

October 27, 1988

Mr. Victor Smith
Union Carbide
Linde Industrial Gases
39 Old Ridgebury Road
Danbury, CT 06817-0001

Dear Victor:

Per our conversation of October 26, we were contacted by Mr. James Bono of NJDEP in response to our ECRA Applicability Determination Application.

Mr. Bono requests that your company file an addendum to our Application number N84670 detailing the products handled and S.I.C. code (he suggested it might be 5169).

Please contact Mr. Bono and get the particulars. He did state that no fee was required (609-633-7141).

Please copy us in your correspondence.

Very truly yours,



Peter D. Moore

Vice President -

Transportation & Distribution

PDM/es

LCP Chemicals
LCP Plastics
LCP Transportation

TO:

Victor Smith

COMPANY:

Union Carbide

TELEPHONE NO.

203-794-6063

FROM:

Peter Moore

COMPANY:

LCP Chemicals

TELEPHONE NO.

201-225-6504

NO. OF COPIES INCLUDING COVER SHEET

2

We have "imprints" and a message!

UNION CARBIDE CORPORATION
Linde Division

39, Old Ridgebury Road
Danbury, CT 06817-0001

OCT 21 1988

UNION CARBIDE CORP.
SOMERSET REGIONAL OFFICE

OCT 21 1988

DiFRANCO

October 20, 1988

TO: R.G. Tisch
Linde Division
Danbury, CT

CC: A.A. Galvan
L.G. Barron
N.A. DiFranco

SUBJECT: LCP - N.J./DEP
ECRA Applicability

Attached is a FAX which I received from Mr. Peter Moore of LCP relative to the subject.

V.A. Smith
V.A. Smith

VAS/jrs
attachment
102088-1.vas



~~RECEIVED~~
D. DeLuca
W. Mikulski BBL

(609) 633-7141

CN 028
Trenton, N.J. 08625-0028

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE MANAGEMENT

Michele M. Putnam
Deputy Director
HAZARDOUS Waste Operations

John J. Treia, Ph.D., Director

Lance R. Miller
Deputy Director
Responsible Party Remedial Action

OCT 06 1988

Mr. Peter Moore
Vice President-Operations
LCP Transportation-Raritan Plaza II
CN 3106
Edison, NJ 08818

RE: LCP Chemicals - New Jersey
S. Wood Ave.
Lot 3.01, Block 587
Linden City, Union County
Environmental Cleanup Responsibility Act (ECRA) - #N84670

Dear Applicant:

The Bureau of ECRA Applicability and Compliance has received your application for an applicability determination. The case has been assigned N84670, and is currently being reviewed by a case manager.

NOTE: Please refer to the above case number in any correspondence or telephone inquiries.

Thank you,

Michael DeTalvo, Supervisor
Bureau of ECRA Applicability and
Compliance (609) 633-7141



TRANSPORTATION, INC.

A Subsidiary of LCP Chemicals & Plastics, Inc. • Raritan Plaza II • Raritan Center • CN #3108 • Edison, N.J. 08818 • (201) 225-4840

September 30, 1988

Industrial Site Evaluation Element
New Jersey Department of
Environmental Protection
CN 028/5th Floor
Trenton, NJ 08625

Attention: Mr. Michael DeTalvo

Re: ECRA Applicability Affidavit
LCP Chemicals - New Jersey
Linden Plant

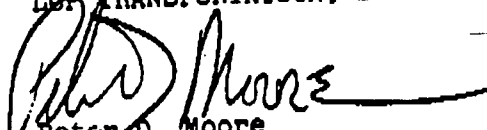
Dear Mr. DeTalvo:

Enclosed herewith for your review is an executed and notarized ECRA Applicability Affidavit associated with the anticipated termination of an existing lease on a portion of a site owned by LCP. Also attached in support of the Affidavit is a description of the operations at the site and a fee of \$100.

Should you have any questions in regard to the materials submitted, please feel free to call me at your convenience.

Very truly yours,

LCP TRANSPORTATION, INC.


Peter D. Moore
Vice President - Operations

PDM/es

encl.

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE MANAGEMENT
INDUSTRIAL SITE EVALUATION ELEMENT
CN 028, TRENTON, N.J. 08625

ENVIRONMENTAL CLEANUP RESPONSIBILITY ACT (ECRA)
APPLICABILITY/NONAPPLICABILITY AFFIDAVIT

The purpose of this Affidavit is to obtain an Applicability/Nonapplicability Determination from the New Jersey Department of Environmental Protection pursuant to the Environmental Cleanup Responsibility Act, N.J.S.A. 13:1K-6 et seq. and N.J.A.C. 7:26B-1.9. Fee is \$100.

PLEASE TYPE OR PRINT

Date September 30, 1988

A. Determination of Applicability/Nonapplicability should be mailed to the following:

Name Peter D. Moore, Vice President - Operations
Address LCP Transportation, Inc., Raritan Plaza II CN 3106
City of Town Edison County Middlesex
State New Jersey Zip Code 08818 Tele. No. (201) 225-6504

B. Name of Business LCP Chemicals - New Jersey

Standard Industrial Classification (SIC) Number (if known) _____

C. Property Location for which request is being transmitted:

Street Address Foot of South Wood Avenue
Tax Block(s) 587 Tax Lot(s) 3.01 (partial)
Municipality Linden County Union
State New Jersey Zip Code 07036

D. Transaction for which the Applicability/Nonapplicability Determination is requested: (Check appropriate transaction)

<input type="checkbox"/> Sale of Business and/or Property	<input type="checkbox"/> Condemnation
<input type="checkbox"/> Business Ceasing Operations	<input type="checkbox"/> Bankruptcy
<input type="checkbox"/> Refinancing/Construction Loan	<input type="checkbox"/> Corporate Merger
<input type="checkbox"/> Sale of Stock in Corporation	<input type="checkbox"/> Partnership Situation Change
<input checked="" type="checkbox"/> Other: (Explain) <u>Termination of lease on a portion of the site.</u>	

Date of Planned Transaction: May, 1989

Purchaser:

Name N.A.
Address _____
City or Town _____ County _____
State _____ Zip Code _____

E. Operations:

Note: The Property Owner must completely describe the operations and processes conducted at the site including a list of all tenants, their operations and processes, occupying any part of the property since December 31, 1983. (Attach additional sheets if necessary.)

See Attached Sheet

F. Current Owner of the Property for which an Applicability/Nonapplicability Determination is requested:

Name LCP Chemicals - New Jersey
Street Address Foot of South Wood Avenue Municipality Linden
State New Jersey Zip Code 07036 Tele. No. (201) 862-1666

G. 1. Previous Owners and history of on-site activities since December 31, 1983 (Attach additional sheets, if necessary):

<u>Name</u>	<u>Address</u>	<u>Operations</u>
-------------	----------------	-------------------

2. Is this site currently or has this site previously been the subject of any other ECRA review?

<input type="checkbox"/> Previous LNA Application	<input type="checkbox"/> Negative Declaration
<input type="checkbox"/> Administrative Consent Order	<input type="checkbox"/> Approved Cleanup Plan
<input type="checkbox"/> Active Case	<input checked="" type="checkbox"/> No prior ECRA Review

Please submit copies of previous submittals or approvals.

H. Hazardous Substances or Wastes: (This information is only required if the facility or business has a subject SIC and a subject transaction.)

List all types and quantities of hazardous substances or wastes including petroleum products that are generated, manufactured, refined, transported, treated, stored, handled or disposed at the property, both above and below ground, which are included in the Department's "List of Hazardous Substances" at Appendix A of N.J.A.C. 7:26 and any amount of any waste substances required to be reported to the Department on special waste manifest forms pursuant to N.J.A.C. 7:26-74, designated as a hazardous waste pursuant to N.J.A.C. 7:26-74, designated as a hazardous waste pursuant to N.J.A.C. 7:26-8, or as otherwise provided by law. (Attach additional sheets if necessary.)

Re-packaging of hydrogen and other non-hazardous gases into cylinders
from bulk truck loads.

I. How is the building(s) heated? (Oil, Gas, Electric)
Storage Capacity of each N.A.

If Oil, how many tanks?
Above or below ground

12/87

J. CERTIFICATIONS:

1. The following certification shall be signed by the highest ranking individual at the site with overall responsibility for that site or activity. Where there is no individual at the site with overall responsibility for that site or activity, this certification shall be signed by the individual having responsibility for the overall operation of the site or activity.

I certify under penalty of law that the information provided in this document is true, accurate and complete. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement which I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of N.J.S.A. 13:1K-6 et seq., I am personally liable for the penalties set forth at N.J.S.A. 13:1K-8.

Typed/Printed Name Peter D. Moore Title Vice President - Operations

Signature [Signature] Date September 30, 1988

Sworn to and Subscribed Before Me

on this 30th
Date of September 19 88

[Signature]
Notary

JILL D. AUBURN

NOTARY PUBLIC OF NEW JERSEY

My Commission Expires January 30, 1991

2. The following certification shall be signed as follows:

1. For a corporation, by a principal executive officer of at least the level of vice president;
2. For a partnership or sole proprietorship, by a general partner or the proprietor, respectively; or
3. For a municipality, State, Federal or other public agency, by either a principal executive officer or ranking elected official.

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate and complete. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement which I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of N.J.S.A. 13:1K-6 et seq., I am personally liable for the penalties set forth at N.J.S.A. 13:1K-8.

Typed/Printed Name Peter D. Moore Title Vice President - Operations

Signature [Signature] Date September 30, 1988

Sworn to and Subscribed Before Me

on this 30th
Date of Sept 19 88

[Signature]
Notary

JILL D. AUBURN

NOTARY PUBLIC OF NEW JERSEY

My Commission Expires January 30, 1991

Have you enclosed a check or money order for \$100? ☒ Yes ☐ No

E. Operations

In 1971 LCP ("the Company") purchased the Linden Plant from GAF Corporation. This 22 acre facility, which was constructed by GAF in the mid to late 1950's, has always been used for the production and terminalling of chlorine and related products such as methylene chloride, caustic soda and potassium hydroxide. During GAF's operation of this plant, approximately 5 acres of the property were dedicated to terminalling operations, approximately 10 acres were dedicated to process operations and approximately 5 acres were used for utilities and waste treatment. During GAF's operations, 2.2 acres of this property was leased to Union Carbide Corporation, Linde Division, which operated a plant to compress and distribute the hydrogen off gases from the chlorine operations.

At the time of purchase in 1971, the production and terminalling operations and associated utility operations were shut down by GAF. In 1972 the Company started up the portion of the production operations and all the terminalling operations. The terminalling operations have operated continuously in the same area of the plant since the LCP purchase, while the production operations have been subject to a number of temporary shut downs brought upon by market demand. As the swing plant among LCP's six (6) chlorine production plants, this plant was started-up and shut down as the demand for chlorine and related products fluctuated. Because of the plant's central location relative to LCP's clients, even when production was not on-going at this plant, it was used for the terminalling and distribution of LCP products from other plants.

On December 31, 1983, the chlorine and related production operations were temporarily shut down while the bleach making, terminalling and utility operations remained in use. Employment at the facility was 16 while sales from the facility in the calendar year 1983 were \$8.4 million.

In July 1984 a portion of the chlorine production operation was again started up and operated until August, 1985 when it was again subject to a temporary shut down due to market conditions. At that time the "mercury cell" production facilities dating from the 1950 and 60's were dismantled. The Company has investigated "diaphragm cell" technology to replace the mercury cell process.

In July 1987 it was determined that no further chlorine production would be done at this site unless a new "membrane cell" technology were feasible in the 1990's. The headquarters for LCP Chemicals Manufacturing (an engineering center for the Company), which is responsible for current operations and membrane cell design, is just getting under way at this site.

Throughout this period and up to the present, the terminalling of caustic soda and related products and the operation of the associated utilities have continued at the plant. Union Carbide has also continued to operate the hydrogen compression station on the 2.2 acre lease site throughout this time by bringing in bulk quantities of gas from other sources. This site will be returned to LCP and probably leased to another firm for a like operation (hydrogen packaging).

The plant site presently includes other tenants. Microcel Corporation, a joint venture of LCP and a manufacturer of glazed beads, has conducted research, development and limited production activities at the site. Liquid Carbonic Corporation leases offices, facilities and services for carbon dioxide rail to truck transfer. Like the Union Carbide lease, LCP has sought long term contracts with outside firms for utilization of the site.

Sales through LCP Chemicals - New Jersey from 1984 to the present are as follows: 1984 - \$10.5 mm; 1985 - \$12.8 mm; 1986 - \$4.6 mm; and 1987 - \$3.4 mm. Budgeted sales throughput for 1988 is estimated at \$6.2 mm. Since 1984, employment has ranged from a high of 65 to a low of 12. Employment at the site is expected to increase in the coming months as business increases and new operations are begun.

In summary, the varying operations conducted by the Company have not triggered ECRA for the site as a whole, since employment and sales throughput changes, which represent the present threshold criteria for establishing ECRA applicability, have not been reached. The cessation of the lease agreement for the 2.2 acre parcel is the only potential trigger for which ECRA applicability must be determined.

TO:

Vic Smith

COMPANY:

Lente

TELEPHONE NO. 501-771-6005

FROM:

Pete Moore

COMPANY:

LCP

TELEPHONE NO.

201-225-6504

NO. OF COPIES INCLUDING COVER SHEET

9

Received
10-20-38
106



Do have "MORRIS" for a message!

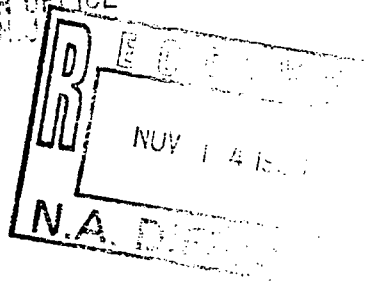


RECEIVED

NOV 14 1988

UNION CARBIDE CORP.
SOMERSET REGION OFFICE
SOMERSET, N.J.

November 10, 1988



Mr. Nick DeFranco
Union Carbide Corporation
200 Cottontail Lane
P.O. Box 6744
Somerset, New Jersey 08875

RE: Union Carbide - Linde Division
Linden, New Jersey

Dear Mr. DeFranco:

Enclosed please find one copy of the draft report entitled "Environmental Site Assessment for Union Carbide Corporation, Linde Division". Please review the text and figures and advise us of any changes that may be necessary.

If you have any questions please call Jeff Melofchik or me.

Very truly yours,

IT CORPORATION

Diane Hogoboom
Project Engineer
ECRA/Industrial Site Audit Division

DH:sm
#529058
Encl.

cc: Scott Hickes

Regional Office

ENG/s750-165 Fieldcrest Avenue • P.O. Box 7809 • Edison, New Jersey 08818-7809 • 201-225-2000

IT Corporation is a wholly owned subsidiary of International Technology Corporation

**LINDE GASES
OF THE MID-ATLANTIC**

RECEIVED

308 Harper Drive
Moorestown, NJ 08057
609-778-6200

NOV 28 1989

UNION CARBIDE CORP.
SOMERSET REGION OFFICE
SOMERSET, NJ

November 22, 1989

N.A. DiFRANCO

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE MANAGEMENT
401 East State Street - Fifth Floor
CN 028
Trenton, New Jersey 08625

ATTENTION: Manifest Section - Annual Reports

RE: ANNUAL WASTE GENERATOR REPORT
FOR EPA I.D. NUMBER NJD011392735

Dear Sirs,

Please find enclosed the 1988 Annual Waste Generator Report for our facility located at the Foot of South Wood Avenue in Linden, New Jersey. Also enclosed is a check in the amount of \$400.00 to cover the associated reporting fee. I trust you'll find the report consistent with your requirements. Should you have any questions and/or require additional information, please contact me at (609) 778-6338.

Very truly yours,



R.A. O'Neal
ENVIRONMENTAL AFFAIRS COORDINATOR
PACKAGED GASES AND DISTRIBUTORS

Enclosure
RAON/amr

CC: Y. Bashir
J.R. Crane
N.A. DiFranco
C.R. Koch

**NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
HAZARDOUS WASTE GENERATOR ANNUAL REPORT 1988
CERTIFICATION FORM**

ITEM 1 USEPA Identification Number: NJD011392735

ITEM 2 Generator (Company) Name: LINDE GASES OF THE MID-ATLANTIC, INC.

ITEM 3 Contact Person: Y. Bashir

ITEM 4 Phone Number: (201) 862-2422

ITEM 5 Certification:

I certify that the information given in this annual report is true, accurate and complete and that I have received the following guide, "GENERATOR'S GUIDE TO UNDERSTANDING THE NEW JERSEY HAZARDOUS WASTE REGULATIONS".

Y. Bashir
(Print or type name)


(Signature)

November 21, 1989
(Date)

ITEM 6

- A ☐ This site (company) generated less than 1.33 tons of hazardous waste for the calendar year 1988 (No Fee)
- B ☐ This site (company) generated greater than 1.33 tons of hazardous waste but less than 10 tons of hazardous waste during the calendar year 1988 (Fee \$200)
- C ☐ This site (company) generated greater than 10 tons of hazardous but less than 100 tons of hazardous waste during the calendar year (Fee \$300)
- D ☒ This site (company) generated greater than 100 tons of hazardous waste during the calendar year (Fee \$400)

ITEM 7 Federal Vendor Identification Number

13-2875638

**NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
HAZARDOUS WASTE GENERATOR ANNUAL REPORT 1988
- REPORT FORM -**

1. **Generator Name** LINDE GASES OF THE MID-ATLANTIC, INC.
2. **USEPA ID Number** NJD011392735
3. **Site Address** Foot of South Wood Avenue
Linden, NJ 07036
4. **Transporter Name** American Industrial Marine
5. **Transporter USEPA ID Number** NJ0981873664
6. **TSD Facility Name** Envirosafe Services of Ohio, Inc.
7. **TSD Facility EPA ID Number** OHD045243706
8. **TSD Address** 876 Otter Creek Road
Oregon, Ohio 43616

9.	<u>Waste</u> A.) <u>Number</u> (1)	<u>Waste</u> B.) <u>Description</u> (11)	<u>DOT Haz</u> C.) <u>Class</u> (11 or J)	<u>Total</u> D.) <u>Quantity</u> (13)	<u>E.) Units</u> (14)
	X-726	Non-RCRA Regulated Waste (Soil Contaminated with Oil)	-	110	Yards

NOTE: For each combination of transporter and treatment, storage and disposal facility (TSDF), list the TOTAL quantity manifested for each waste type.

**NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
HAZARDOUS WASTE GENERATOR ANNUAL REPORT 1988
- REPORT FORM -**

1. **Generator Name** LINDE GASES OF THE MID-ATLANTIC, INC.
2. **USEPA ID Number** NJD 011392735
3. **Site Address** Foot of South Wood Avenue
Linden, NJ 07036
4. **Transporter Name** Freehold Cartage, Inc.
5. **Transporter USEPA ID Number** NJD054126164
6. **TSD Facility Name** SCA Chemical Services, Inc.
7. **TSD Facility EPA ID Number** NYD049836679
8. **TSD Address** 1550 Balmer Road
Model City, NY 14107

9.	Waste	Waste	DOT Haz	Total	
A.) <u>Number</u>	B.) <u>Description</u>	C.) <u>Class</u>	D.) <u>Quantity</u>	E.) <u>Units</u>	
(1)	(11)	(11 or J)	(13)	(14)	
D009	RQ Hazardous Waste Solid, N.O.S. (Mercury Contaminated debris)	ORM-E (NA 9189)	297	Yards	

NOTE: For each combination of transporter and treatment, storage and disposal facility (TSDF), list the TOTAL quantity manifested for each waste type.

**NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
HAZARDOUS WASTE GENERATOR ANNUAL REPORT 1988
- REPORT FORM -**

1. **Generator Name** LINDE GASES OF THE MID-ATLANTIC, INC.
2. **USEPA ID Number** NJD011392735
3. **Site Address** Foot of South Wood Avenue
Linden, NJ 07036
4. **Transporter Name** American Industrial Marine Service
5. **Transporter USEPA ID Number** NJD981873664
6. **TSD Facility Name** SCA Chemical Services, Inc.
7. **TSD Facility EPA ID Number** NYD049836699
8. **TSD Address** 1550 Balmer Road
Model City, NY 14107

9.	<u>Waste</u> A.) <u>Number</u> (I)	<u>Waste</u> B.) <u>Description</u> (11)	<u>DOT Haz</u> C.) <u>Class</u> (11 or J)	<u>Total</u> D.) <u>Quantity</u> (13)	<u>E.) Units</u> (14)
	D009	RQ Hazardous Waste Solid, N.O.S. (Mercury Contaminated Debris)	ORM-E (NA 9189)	90	Yards

NOTE: For each combination of transporter and treatment, storage and disposal facility (TSDF), list the TOTAL quantity manifested for each waste type.

**NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
HAZARDOUS WASTE GENERATOR ANNUAL REPORT 1988
- REPORT FORM -**

1. **Generator Name** LINDE GASES OF THE MID-ATLANTIC, INC.
2. **USEPA ID Number** NJD011392735
3. **Site Address** Foot of South Wood Avenue
 Linden, NJ 07036
4. **Transporter Name** I.T., Corporation
5. **Transporter USEPA ID Number** PAD002390961
6. **TSD Facility Name** Bethlehem Apparatus Company, Inc.
7. **TSD Facility EPA ID Number** PAD002390961
8. **TSD Address** Hellertown, PA

9.	<u>Waste</u>	<u>Waste</u>	<u>DOT Haz</u>	<u>Total</u>	
	<u>A.) Number</u>	<u>B.) Description</u>	<u>C.) Class</u>	<u>D.) Quantity</u>	<u>E.) Units</u>
	(I)	(II)	(11 or J)	(13)	(14)
	D009	RQ Waste Mercury Metallic	ORM-B (NA 2809)	526	P

NOTE: For each combination of transporter and treatment, storage and disposal facility (TSDP), list the TOTAL quantity manifested for each waste type.

Conversions for page # 4:

$$\text{Tons} = \frac{\text{Gallons (G)} \times 8.34}{2000}$$

$$= \text{Pounds (P)} \text{ divided by } 2000$$

$$= \frac{\text{Cubic Yards (Y)} \times 1684.8}{2000}$$

$$= \frac{\text{Liters (L)} \times 2.203}{2000}$$

$$= \frac{\text{Kilograms (K)} \times 2.204}{2000}$$

THIS CHECK IS IN FULL SETTLEMENT OF THE FOLLOWING

DETACH BEFORE DEPOSITING

INVOICE NUMBER	INVOICE DATE	GROSS AMOUNT	DISCOUNT	NET AMOUNT	CHECK NUMBER	VENDOR NUMBER
R/P11/17	11/17/89	400.00		400.00	20958	30223
CHECK TOTALS		400.00	.00	400.00		

**LINDE GASES
OF THE MID-ATLANTIC**

DBA
GAS TECHNICS

GASES & EQUIPMENT CENTERS
OF NEW JERSEY, INC.

P.O. BOX 240, OAKLAND, N.J. 07436
(201) 337-7003

CITIZENS FIRST
NATIONAL BANK OF NEW JERSEY

OAKLAND OFFICE
OAKLAND, N. J. 07436

55-296/212

20958

PAY

*****400 DOLLARS AND 00 CENTS

DATE	PAY THIS AMOUNT
11/21/89	****400.00

TO THE
ORDER
OF

N.J. DEPT. OF ENVIRONMENTAL PROTEC.
401 E. STATE ST. 5TH FL.
CN028
TRENTON NJ 08625

[Signature]
[Signature]

THIS CHECK MUST BEAR TWO SIGNATURES

⑈020958⑈ ⑆021202968⑆ ⑈1510076200⑈



PACKAGED
GASES
NATIONAL OFFICE

Union Carbide Industrial Gases Inc.
National Packaged Gases Office
P.O. Box 6744, 200 Cottontail Lane
Somerset, New Jersey 08875-6744
Tel.: 908-271-2600
Fax: 908-271-2699

October 21, 1991

Mr. John Finn
FIBA Compressed Gases and Equipment
c/o Ultra Pure Gases, Inc.
97 Turnpike Road
Westboro, MA 01581

RE: LINDEN, NEW JERSEY

Dear Mr. Finn:

Union Carbide Industrial Gases Inc. (UCIG) is currently involved in environmental evaluation and remediation activities at the Linden, NJ site in compliance with New Jersey ECRA regulations. These regulations were triggered when UCIG terminated its lease with LCP and the property subsequently leased to Ultra Pure Gases.

Under the ECRA regulations, and lease agreement with Ultra Pure Gases, UCIG retains responsibility for meeting cleanup criteria up to the point at which UCIG operational control ceased. Ultra Pure Gases is responsible for all environmental compliance activities, both state and federal, beyond the date at which Ultra Pure Gases assumed operational control.

I am bringing this to your attention because the New Jersey DEPE, in their recent ECRA correspondence to UCIG regarding the Linden site, has requested that Linde clarify whether non contact cooling water (and hydrostatic test water) is still discharged to the ground. Further, the DEPE has requested that the discharge cease if not done so already and that a NJPDES/DGW water discharge permit application be submitted if discharges are to resume.

The DEPE also requests that the Bureau of Municipal Discharge Permits be contacted to determine whether a discharge permit is required for the septic system. The phone number is: 609/633-3869.

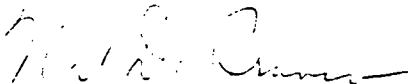
Linde intends to respond to these requests by indicating it no longer has operational control over the Linden facility and that these requests are properly directed to the current operator of the Linden facility, Ultra Pure Gases.

It has also come to Linde's attention that either LCP or Ultra Pure Gases has allowed a portion of the Linden property to be used as a staging area for Active Water Jet Company. I have personally observed employees of this company wash their equipment, allowing the wash water to run into an area which is undergoing ECRA evaluation and remediation. It is not clear to us whether this Company has a permit to discharge industrial waste waters within the confines of the Linden property. Further, under the terms of the Lease agreement, Ultra Pure Gases may be liable for remediation for adverse environmental impacts as a result of this activity.

Unless properly addressed, these above listed activities may jeopardize the completion of the ECRA process at the Linden site and may result in enforcement action against UCIG and/or Ultra Pure Gases. Your prompt attention to these matters is required. UCIG also requests a written response as to the actions you intend to take regarding the discharge of non-contact cooling water, hydrostatic test water, permitting of the septic system and the activities of Active Water Jet Company.

Please respond to my attention at the above address. I can also be reached at 908/271-2702.

Very truly yours,



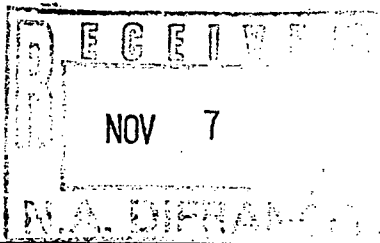
N. A. DiFranco
Manager - Environmental Affairs

NAD:jle
(letters10)

cc: L. E. Barron
J. J. Sibley
R. G. Tisch
I. Tundidor



QUALITY PRODUCTS-SERVICE



FIBA Compressed Gas Equipment
P. O. Box 897, 97 Turnpike Road
Westboro, MA 01581- 0897
TEL (508) 366-8361 FAX (508) 366-1915

November 5, 1991

Union Carbide Industrial Gases
National Packaged Gases Office
P.O. Box 6744, 200 Cottontail Ln.
Somerset, New Jersey 08875-6744

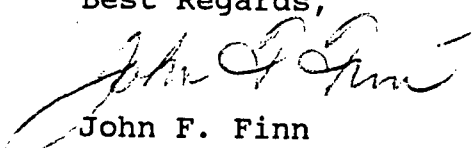
ATTN: W.A. DiFranco

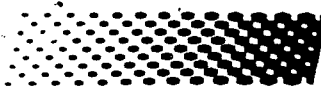
Dear Mr. DiFranco,

I appreciate your concerns on the Linden site. We now do understand we must file a permit for water discharge. We will file for this permit immediately. I must point out the operations currently in existence is the same as it was under UCIG control. Our operations include testing of cylinders and hydrogen pumping.

In regards to Active Water Jet Company. This business was on the premises when UCIG operated the facility. Ultra Pure Gases has no agreement with Active Water Jet. Active Water Jet has been on this site long before Ultra Pure Gases. We have assumed there was an arrangement in place between LCP/UCIG and Active Water Jet. If this is not the case, I suggest you contact L.C.P. in regards to Active Water Jet. Ultra Pure Gases has no control or relationship with Active Water Jet. As soon as our permit for water disposal is in place you will be contacted. Please give me a call if I can be of help in any other way.

Best Regards,


John F. Finn



LINDE
UNION CARBIDE

PACKAGED
GASES
NATIONAL OFFICE

INTERNAL
CORRESPONDENCE

NATIONAL PACKAGED GASES OFFICE
P.O. BOX 6744, 200 COTTONTAIL LANE
SOMERSET, NJ 08875-6744
TEL.: 201-271-2600
FAX: 201-271-2699

To L. E. Barron

Date November 22, 1991

Originating Dept. Environmental Affairs

Copy to

Subject Linden NJ-ECRA

The attached letter from Frank Finn, owner of Ultra Pure Gases, the current operator of the Linden site, indicates that the Active Water Jet Company is not associated with or has any arrangements with Ultra Pure Gases. Apparently LCP has allowed Active Water Jet to operate on the Linden site. The problem that exists is that the activities of Active Water Jet may conflict with the ECRA cleanup of Linden and possibly contaminate the same areas we are trying to decontaminate.

I believe it necessary for Business Management or SHEA to contact LCP to advise them of this situation and request cessation of Active Water Jet activities.

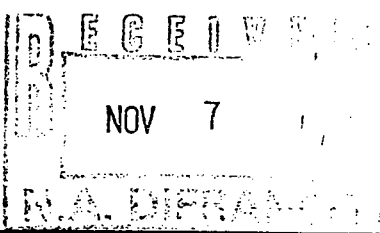
Let's discuss this in more detail.


N. A. DiFranco

NAD/lmk
Attachment



QUALITY PRODUCTS-SERVICE



FIBA Compressed Gas Equipment
P. O. Box 897, 97 Turnpike Road
Westboro, MA 01581-0897
TEL (508) 366-8361 FAX (508) 366-1915

November 5, 1991

Union Carbide Industrial Gases
National Packaged Gases Office
P.O. Box 6744, 200 Cottontail Ln.
Somerset, New Jersey 08875-6744

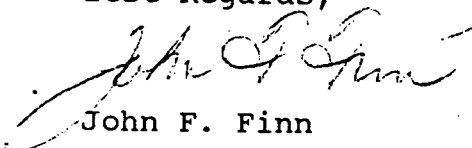
ATTN: W.A. DiFranco

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Best Regards,


John F. Finn

LAW OFFICES

COHEN, SHAPIRO, POLISHER, SHIEKMAN AND COHEN

PRINCETON PIKE CORPORATE CENTER
1009 LENOX DRIVE-BUILDING FOUR
LAWRENCEVILLE, NEW JERSEY 08648
(609) 895-1600

FAX: (609) 895-1329, 895-0587

PSFS BUILDING, 12 SOUTH 12TH STREET
PHILADELPHIA, PENNSYLVANIA 19107-3981
(215) 922-1300

FAX: (215) 592-4329

CABLE: COSAC

COUNSEL
REMO J. BUTERA
GEORGE WARREN*Δ†

BENNETT L. AARON*Δ
ROBERT L. BLACKSBERG
HOWARD A. BLUM
JEFFREY L. BRAFF*
DAVID J. BROOMAN*
SYLVAN M. COHEN
HOWARD J. EICHENBAUM*
ROBERT FREEDMAN
W. JEFFREY GARSON
VINCENT E. GENTILE*Δ†
MICHAEL H. GLUCK*
DAVID J. GOLDBERG*†
ROBERT E. GOLDSMITH*
RICHARD J. GOLDSTEIN*
GREGORY G. GOSFIELD
DAVID GUTIN*
NEIL K. HAIMM*Δ
BRUCE S. HAINES*
KIMON C. HATZA
ANDREW S. HILLMAN
ROXANNE E. JAYNE*
ALAN KLEIN
MURRAY J. KLEIN*
MICHAEL J. KLINE*
JANET S. KOLE
JUDAH I. LABOVITZ*Δ
SUSANNA E. LACHS
ROBERT LAPOWSKY*

ALAN M. LERNER*Δ
JONATHAN L. LEVIN
BRUCE LUBITZ*†
C. SCOTT MEYER*
JEFFREY IVAN PASEK*Δ
RICHARD B. PEARL
EDWARD N. POLISHER
ROSALYN G. POLLACK
IVAN J. PUNCHATZ*
ELLEN RADOW*
HERSHEL J. RICHMAN
PHILIP M. SHIEKMAN*Δ
RICHARD M. SQUIRE
ERIC L. STERN
STEPHEN C. SUSSMAN
ROBERT I. TUTEUR*
FRANCES M. VISCO
WILLIAM L. WARREN*Δ†
RICHARD N. WEINER
DIANE ROSECRANS WENDER

OF COUNSEL
PETER G. SHERIDAN*Δ†

* ADMITTED IN NEW JERSEY
Δ ADMITTED IN NEW YORK
† NOT ADMITTED IN PENNSYLVANIA

MICHELLE BANKS-SPEARMAN*
DAISY B. BARRETO*
CHARLES BENDER
SUSAN B. BIZENOV*
SUZANNE E. BLANCHARD*
PAUL BONI*
CHRISTOPHER W. BOYLE*
LESLIE THOMAS BRADLEY
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VERNON R. BYRD, JR.
CLARE M. DIEMER*
MARK A. DROGALIS*
ELETHA L. DUFFY*†
JOHN R. ERICKSON*
JAMES G. FEARON*Δ
JOHN M. GERBER*
JUDITH I. GLEASON*
ROBERTA A. GOLDEN
CURTIS L. GOLKOW*
ERIC A. HEINZ*
MARK S. HERR*†
SUSAN E. HOFFMAN*
NADINE HOLLANDER*
DAVID L. HYMAN*

LINDA T. JACOBS*
JOHN P. JUDGE*
SHERRY A. KAJDAN
SARA BETH KALBA
MIGNON D. KLEIN*
STEWART H. LAPAYOWKER*
ELIZABETH G. LITTEN*
LORI A. MILLS*
ALISE R. PANITCH*
STEVEN M. PLOH*
LAURIE H. POLINSKY*
HOLLY T. RIBLET*
ROBERT ROSS*
LAWRENCE J. SCHEMPP*
AMY F. STEERMAN*
GOLDA WEBER STEIER*
JEANNE M. STIEFEL*†
CHRISTINA WOODWARD STRONG*†
STEPHEN TARNOWSKI*
EFTHYMOS VELANOS*†
AMY L. VENTRY*
RICHARD A. WEST*Δ†
ROBERT J. YARBROUGH
STEPHEN V. YARNELL

August 17, 1992

DIRECT DIAL: 609-895-6203

REPLY TO: Lawrenceville

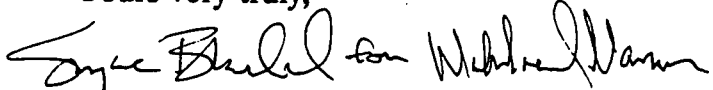
Ms. Tina Layre
New Jersey Department of Environmental Protection and Energy
Bureau of ECRA Applicability and Compliance
Industrial Site Evaluation Element
401 East State Street, 5th Floor
Trenton, New Jersey 08625-0028

RE: In the Matter of Praxair, Inc., ECRA Case #'s 90254, 92369, 92370, 92372, 92373 and 92336; Application for Amendment Regarding the Facility Located at the Foot of South Wood Avenue, Linden, New Jersey

Dear Tina:

I am enclosing under cover of this letter the application for an Administrative Consent Order amendment for the Linden facility formerly operated by Linde Gases of the Mid-Atlantic, a wholly owned subsidiary of Praxair, Inc., as you requested. As I stated to you during our telephone conversation, I do not believe that there is any basis in statute or regulation for the inclusion of this facility in the Administrative Consent Order recently executed by Praxair, Inc. In order to avoid any controversy, however, Praxair, Inc. has agreed to submit this application. Submission of this application should not be interpreted as an agreement by or on behalf of Praxair, Inc. that any statutory or regulatory obligation exists which would require inclusion of the Linden facility in an Administrative Consent Order. Rather, this application is made to avoid any unnecessary conflict with the Department, as the Linden facility is already moving through the ECRA process.

Yours very truly,



William L. Warren

WLW:np
Enclosure

ECRA-012 (3/91)

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE MANAGEMENT
INDUSTRIAL SITE EVALUATION ELEMENT
CN 028, TRENTON, N.J. 08625

ENVIRONMENTAL CLEANUP RESPONSIBILITY ACT (ECRA)

ADMINISTRATIVE CONSENT ORDER AFFIDAVIT

The purpose of this application is to solicit an Administrative Consent Order (ACO) from the New Jersey Department of Environmental Protection. The ACO will allow the transaction or closing to occur prior to full compliance with the act. In return, the ordered party agrees to fully comply with the ACO. Fee is \$2,000 (ACO) or \$500 (Amendment).

PLEASE TYPE OR PRINT

Date August 17, 1992

- A. Has an ACO previously been executed for this site? Yes X No

If yes: Case Number
Ordered Party
Date of Execution

- B. Has an Initial Notice been filed for this transaction? X Yes No

If yes: Case Number 90367

If no, attach a completed ECRA 1, General Information Submission (N.J.A.C. 7:26B-3.2), to this application for each facility to be included in the ACO along with appropriate fees pursuant to N.J.A.C. 7:26B-1.10. If the applicant is proposing a financial assurance less than \$100,000 for this site, include a fully completed Site Evaluation Submission in accordance with N.J.A.C. 7:26B-7.3(b).

- C. The ordered party in this ACO will be the following: (Attach additional sheets if there are multiple ordered parties.)

Name Praxair, Inc.

Address 39 Old Ridgebury Road

City of Town Danbury State CT Zip Code 06817-0001

State of Incorporation, if applicable Delaware

- D. Designate lead ordered party in instances where multiple ordered parties are proposed.

Name N/A

Address

City of Town State Zip Code

State of Incorporation, if applicable

- E. Industrial Establishment(s) in New Jersey: (Attach additional sheets if there are more than one to be included in ACO.)

Name Linde Gases of the Mid-Atlantic, Inc.

Street Address Foot of South Wood Avenue

City or Town Linden

State NJ Zip Code 07036

Municipality Linden

County Union

Block(s) 00587

Lot(s) 00003

State(s) of Incorporation New Jersey

Standard Industrial Classification (SIC) Number 5169

- F. Description of Industrial Establishment operations (be specific; use additional sheets if ore than one Industrial Establishment.):

Former hydrogen filling station for cylinders and tube trailers for delivery to customers.

- G. Current owner of the property for which this ACO is requested (Use additional sheets if more than one):

Name LCP Chemicals - New Jersey, a division of Hanlin Group, Inc.

Street Address P. O. Box 484, Foot of South Wood Avenue

City or Town Linden State NJ Zip Code 07036

State of Incorporation, if applicable DE

- H. Individual submitting this request:

Name William L. Warren

Affiliation Cohen, Shapiro, Polisher, Shiekman and Cohen

Address 1009 Lenox Drive

City or Town Lawrenceville State NJ Zip Code 08648

Phone Number (609) 895-1600

Who do you represent? Praxair, Inc.

- I. Describe, in detail, the transaction for which this ACO is requested (closing, selling, stock purchase, etc.): (Attach additional sheets, if necessary.)

This amendment to the Administrative Consent Order executed by Praxair, Inc. on June 30, 1992 involves the addition of the Linden property, now undergoing ECRA cleanup as a result of the expiration of the Linde Gases lease and the consequent cessation of operations at the site by Linde Gases.

- J. Attach any agreement(s), termination notices, or letter(s) of intent for this sale, stock purchase, leasehold termination, or closing, if not previously submitted as part of the Initial Notice.

Date the agreement or Letter of Intent was signed _____

Date for closing the transaction Spin-off took place June 30, 1992

Date for cessation of operations June 1990

Will operations continue at the Industrial Establishment? X Yes No

If so, name of entity Ultrapur Compressed Gases, Inc. (1990)

- K. State the criteria as listed in N.J.A.C. 7:26B-7.1, upon which this ACO is being requested and appropriate justification to support the criteria.

Not applicable - ACO amendment application

- L. Purchaser or new lessee: (Attach additional sheets, if necessary)

Name Ultrasure Compressed Gases, Inc. (1990)

Address Foot of South Wood Avenue

City or Town Linden State NJ Zip Code 07036

State of Incorporation NJ

- M. Partnerships: If the owner, operator, and/or ordered party is a partnership, give type of partnership (limited/general) and state where registered. If a general partnership, attach a list of the names and addresses of all current general partners, or, if a limited partnership, attach the Certificate of Limited Partnership and identify managing general partner(s).

N/A

- N. Source(s) of Environmental Concern - Answer all categories concerning the Industrial Establishment and attach sheets providing any additional information on applicable areas.

1. Are there any Drum Storage Areas? (Y/N) Y (property of Active Water Jet, using the facility for maintenance & storage space)
 - How many are located inside? 0 How many are located outside? 1
 - How many outside are on pads? 1 Are they diked and curbed? (Y/N) N Are they covered? (Y/N) N
 - How many are on soil? 0 Are they diked and curbed? (Y/N) - Are they covered? (Y/N) -
2. Are there any Above Ground Storage Tanks? (Y/N) Y
 - How many are located inside? 0 How many are located outside? 4
 - How many outside are on pads? 4 Are they diked and curbed? (Y/N) N Are they covered? (Y/N) N
 - How many are outside on soil? 0 Are they diked and curbed? (Y/N) - Are they covered? (Y/N) -
 - What substance(s) are stored/# of gallons? 18,000 gal. liq. hydrogen; 1,500 gal. liq. nitrogen; Active Waterjet has 2 approximately 500 gal. tanks
 - Are they RCRA permitted? (Y/N) N
3. Are there any Underground Storage Tanks (UGSTs)? (Y/N) Y How many? 1
 - What substances are stored/# of gallons? N/A - approx. 1,000 tank abandoned in place
 - How many UGSTs have been tested? 0 How many UGSTs passed? - Date(s) tested: -
 - Are they RCRA permitted? (Y/N) N

4. Are there any Monitoring Wells on site? (Y/N) Y How many are permitted? 7
5. Are there any discharges to: Surface Water? (Y/N) N Permitted? (Y/N) —
 Ground Water? (Y/N) N Permitted? (Y/N) —
 Sanitary Sewer? (Y/N) N Permitted? (Y/N) —
 Storm Sewer? (Y/N) N Permitted? (Y/N) —
 Air (Y/N) N Permitted? (Y/N) —
6. Are there any: Landfills (Y/N) N Permitted? (Y/N) —
 Waste Piles? (Y/N) Y Permitted? (Y/N) —
 (soil from remediation activities)
7. Are there any Transformers? (Y/N) Y How many are interior? 0 PCB? (Y/N) —
 How many are exterior? 3 Public/Private? (Y/N) public PCB? (Y/N) N
8. Are there any: Lagoons? (Y/N) N Permitted? (Y/N) — RCRA Permitted? (Y/N) —
 Surface Impoundments? (Y/N) N Permitted? (Y/N) —
 Fire Ponds? (Y/N) N Permitted? (Y/N) —
 Stormwater Retention Basins? (Y/N) N Permitted? (Y/N) —
9. Are there any: Septic Systems? (Y/N) Y Sanitary use? (Y/N) Y Industrial use? (Y/N) N
 Dry Wells? (Y/N) N Sanitary use? (Y/N) — Industrial use? (Y/N) —
 Seepage Pits? (Y/N) N Sanitary use? (Y/N) — Industrial use? (Y/N) —
10. Are there any Spill Areas? (Y/N) Y Type of spill and # of gallons: use oil - quantity unknown
 Was area remediated? (Y/N) yes - under ECRA review
11. Are there any Loading Docks? (Y/N) N How many are paved? — How many are covered? —
12. Are there any Rail Sidings? (Y/N) N
13. Are there any Pumping Stations? (Y/N) N
14. Are there any Dumpsters? (Y/N) Y Household use? (Y/N) Y Industrial Use? (Y/N) N
15. Are there any: Floor Drains? (Y/N) Y What is the discharge point? underground to LCP
 Roof Drains? (Y/N) Y What is the discharge point? underground to LCP
16. Does the Building interior contain Asbestos? (Y/N) Y Deteriorated Floors? (Y/N) N Vents? (Y/N) N
 Equipment Decontamination? (Y/N) N (transite board blowout panels in good condition)
17. Any other areas? No

O. Summary of Enforcement Actions for Violation of Environmental Laws or Regulations:

List any civil/criminal actions taken against the owner or operator, managers or officials of the Industrial establishment(s) for violations of any environmental laws or statutes. (Attach additional sheets, if necessary.)

Check here if no enforcement actions are involved — See Attachment A

Date of Action —

Section of Law or Statute violated —

Type of Enforcement Action —

Description of the Violation —

How was the violation resolved?

P. Previous Owner and Operator for history since December 31, 1983: (Attach additional sheets if necessary)

Name	Owner/ Operator	From	To
Linde Gases of the Mid-Atlantic,	formerly	1950	present
Union Carbide, Linde Division,	(operator)		
formerly Union Carbide Industrial Gases, Inc.			
LCP Chemicals - New Jersey, a	owner	1980	present
division of Hanlin Group, Inc. formerly			
Linden Chlorine Products			

Brief description of past operation(s) conducted on site since December 31, 1983:
(Attach additional sheets if necessary)

Former hydrogen filling station for cylinders and tube trailers for
delivery to customers.

Q. Purchaser or New Lessee Authorization:

I am the purchaser ___ and/or new lessee ___ of this Industrial Establishment. I have read this application and am aware of the requirements and conditions of ECRA Administrative Consent Orders. I agree to allow the seller, previous owner, previous tenant, an ordered party under an ECRA ACO or any of their respective agents or assignees plus the Department of Environmental Protection the right to enter the Industrial Establishment after I own it or lease it for the purpose of Environmental investigation and cleanup, if required. Additionally, I understand that if a cleanup is warranted at this Industrial Establishment, a deed notice or restriction may be part of a remediation plan approved by the Department.

Sworn to and Subscribed Before Me
on this _____
Date of _____, 19____

Notary Public

Signature

Printed Name

Title

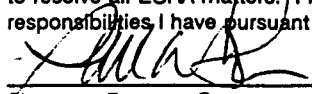
Company

Date

(Complete this section for each Industrial Establishment)

R. Owner and Operator Authorization:

I hereby certify that I am fully aware of the requirements of the Environmental Cleanup Responsibility Act in particular the owner/operator responsibilities pursuant to the ECRA regulation, N.J.A.C. 7:26B. I acknowledge that an Administrative Consent Order has been requested to allow this transaction to proceed prior to full ECRA compliance and that the ordered party is agreeing to resolve all ECRA matters. I further acknowledge that the execution of an ACO by the ordered party shall not release me from any responsibilities I have pursuant to ECRA and the regulations.


Signature-Property Owner

Randall W. Hansen

Printed Name

Executive Vice President

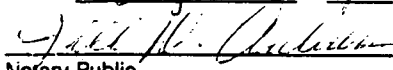
& General Manager - Chemicals

Title LCP Chemicals, a Div. Hanlin Group, Inc. Company

8/11/92
Date

Sworn to and Subscribed Before Me

on this 11th
Date of August 19 92


Notary Public

JILL D. AUBURN

S. CERTIFICATIONS: NOTARY PUBLIC OF NEW JERSEY
My Commission Expires Jan. 21, 1996

1. The following certification shall be signed by the highest ranking individual at the site with overall responsibility for that site or activity. Where there is no individual at the site with overall responsibility for that site or activity, this certification shall be signed by the individual having responsibility for the overall operation of the site or activity.

I certify under penalty of law that the information provided in this document is true, accurate and complete. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement which I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of N.J.S.A. 13:1K-6 et seq. I am personally liable for the penalties set forth at N.J.S.A. 13:1K-13.

Typed/Printed Name _____

Title _____

Signature _____

Date _____

Company _____

Sworn to and Subscribed Before Me

On this _____
Date of _____

Notary

S. CERTIFICATIONS:

1. The following certification shall be signed by the highest ranking individual at the site with overall responsibility for that site or activity. Where there is no individual at the site with overall responsibility for that site or activity, this certification shall be signed by the individual having responsibility for the overall operation of the site or activity.

I certify under penalty of law that the information provided in this document is true, accurate and complete. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement which I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of N.J.S.A. 13:1K-6 et seq., I am personally liable for the penalties set forth at N.J.S.A. 13:1K-13.

Typed/Printed Name John R. Crane Title Plant Manager
 Signature [Signature] Date 8-10-92
 Company Praxair Incorporated

Sworn to and Subscribed Before Me

on this 10th
 Date of August 19 92

[Signature]
 Notary

2. The following certification shall be signed as follows:

1. For a corporation, by a principal executive officer of at least the level of vice president;
2. For a partnership or sole proprietorship, by a general partner or the proprietor, respectively; or
3. For a municipality, State, Federal or other public agency, by either a principal executive officer or ranking elected official.

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate and complete. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate, or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement which I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of N.J.S.A. 13:1K-6 et seq., I am personally liable for the penalties set forth at N.J.S.A. 13:1K-13.

Typed/Printed Name E. G. Hotard Title President
 Signature [Signature] Date 8/13/92
 Company PRAXAIR, Inc.

Sworn to and Subscribed Before Me

on this 13th
 Date of August 19 92

[Signature]
 Notary

SUSANNE RUOKONEN
 NOTARY PUBLIC
 MY COMMISSION EXPIRES MARCH 31, 1995

Have you enclosed a check or money order for \$2,000 (ACO) or \$500 (Amendment)?

 Yes No

ATTACHMENT A

Summary of Enforcement Actions for Violation of Environmental Laws or Regulations:

A. Date of Action 12/18/89

Section of Law or Statute violated N.J.A.C. 7:26-7.4(a)511

Type of Enforcement Action Civil Administrative Penalty Assessment

Description of the Violation The generator failed to obtain the signature and date of acceptance from the hauler.

How was the violation resolved? Generator obtained signature and date from hauler and forwarded corrected manifest to NJDEPE. A penalty of \$1,000.00 was also forward to the NJDEPE.

B. Date of Action 9/15/88

Section of Law or Statute violated F.4006 & F-2910.4 (Fire Codes)

Type of Enforcement Action Penalty Assessment

Description of the Violation Failure to report an explosion and vapor release of hydrogen into the air to the Fire Department.

How was the violation resolved? Pressure was released from cylinders to prevent recurrence of explosion by trained Linde personnel. A penalty of \$1,000.00 was forwarded to the Fire Prevention Bureau.

C. Date of Action 12/01/87

Section of Law or Statute violated N.J.S.A. 58:10-23.11(c)

Type of Enforcement Action Notice of Violation

Description of the Violation Discharge of a hazardous substance (Hydrogen Carbon)

How was the violation resolved? The contaminated soil was excavated and disposed of at EnviroSAFE hazardous waste facility in Ohio.

LAW OFFICES
COHEN, SHAPIRO, POLISHER,
SHIEKMAN AND COHEN
PRINCETON PIKE CORPORATE CENTER
1009 LENOX DRIVE BUILDING 4
LAWRENCEVILLE, N.J. 08648

EXPLANATION	AMOUNT
Linden ACO	500.00

55-305/312

3309

T Five hundred and 00/100

DOLLARS

CHECK
AMOUNT

TO THE ORDER OF	DESCRIPTION	CHECK NUMBER
Bureau of ECRA Applicability	01927-011	3309

\$ 500.00

UNITED JERSEY BANK CENTRAL, N.A.
CAPITOL VIEW OFFICE

Ronald Payne

⑈003309⑈ ⑆031203054⑆ 31⑈50408⑈6⑈

PRAXAIR, INC.
Law Department
39 Old Ridgebury Road
Danbury, CT 06810-5113

Richard G. Tisch
Senior Group Counsel
Safety, Health & Environment

Telephone: (203) 837-2318
Facsimile: (203) 837-2515
(203) 837-2545

April 24, 1998

VIA FAX (212) 637-3096 & FIRST CLASS MAIL

Muthu Sundram, Esq.
Assistant Regional Counsel
Office of Regional Counsel
U.S. Environmental Protection Agency
Region II
290 Broadway, 17th Floor
New York, NY 10007

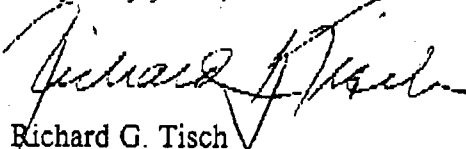
Re: LCP Chemical Site - Linden, New Jersey

Dear Muthu:

This confirms our conversation last night during which you agreed to provide Praxair, Inc. an extension until May 1st to respond to EPA's February 27, 1998 information request under CERCLA.

Thank you.

Very truly yours,


Richard G. Tisch

RGT/jm

cc: Mr. Richard Ho
Emergency and Remedial Response
U.S. Environmental Protection Agency
Region II
290 Broadway, 19th Floor
New York, NY 10007

bcc: N. A. DiFranco

Nick: Please provide me your input by Wednesday, April 29th.

Union Carbide Corporation

Roger Florio
Environmental Counsel
Law Department (E3-259)

39 Old Ridgebury Rd., Danbury, CT 06817

Internet Address: florio@ucarb.com
Telephone: 203-794-6014
Facsimile: 203-794-6269

April 8, 1998

Mr. Richard Ho
Emergency and Remedial Response Division
U.S. Environmental Protection Agency, Region 2
290 Broadway, 19th Floor
New York, New York 10007

Re: LCP Chemical Site, Linden, Union County, New Jersey

Dear Mr. Ho:

This letter is written on behalf of Union Carbide Corporation ("UCC"), in response to an Information Request from EPA Region 2 dated February 27, 1998, and received by UCC on March 9, 1998, seeking information concerning the above-referenced LCP Chemical Site. As detailed below, UCC's former industrial gas business operated a hydrogen plant in Linden from 1957-1990 on property leased from LCP Chemical. In 1992, UCC transferred its industrial gas business to Praxair, Inc.; historical and operating records relevant to the Linden hydrogen plant transferred to Praxair at that time. UCC notes that a copy of the information request was also directed to Praxair and understands that Praxair will be responding to the information request with respect to the Linden hydrogen plant based on its own investigation. UCC is aware of no other potential UCC nexus to the LCP site other than through its former industrial gas business. UCC's responses to the specific questions set out in the information request follow:

1.
 - a. Union Carbide Corporation.
 - b. A copy of UCC's most recent annual report which identifies the presiding officers of UCC is attached to this response.
 - c. UCC was incorporated in the State of New York in 1917. The Agent for Service of Process in New York and New Jersey is CT Corporation Systems.
 - d. Copies of the 1994 Certificate of Merger of Union Carbide Corporation into Union Carbide Chemicals and Plastics Company Inc., together with a copy of the Restated Certificate of Incorporation of Union Carbide Corporation, are attached to this response.
 - e. UCC is not a subsidiary or affiliate of another business. UCC has many subsidiaries, a full list of which can be provided upon request. Subsidiaries relevant to the LCP Chemical site are former subsidiary Union Carbide Industrial Gases Inc. and its wholly-owned subsidiary Linde Gases of the Mid Atlantic Inc. Union Carbide Industrial Gases Inc. was created in 1989 when

UCC realigned its four principal businesses into four independent operating groups, each of which was held and operated by a wholly-owned subsidiary of a newly formed holding company. Following the exchange, the holding company took the name "Union Carbide Corporation," and the chemicals business of the prior UCC changed its name to "Union Carbide Chemicals and Plastics Company Inc.," which became a wholly-owned subsidiary of the holding company. Similarly, the industrial gas business was transferred to another newly formed subsidiary called "Union Carbide Industrial Gases Inc." UCC understands that at some point the Linden hydrogen plant was transferred to a wholly-owned subsidiary of Union Carbide Industrial Gases Inc. called Linde Gases of the Mid Atlantic Inc.

In 1992, UCC spun off its industrial gas business to its shareholders by distributing the shares of Union Carbide Industrial Gases Inc. to its shareholders. Union Carbide Industrial Gases Inc. then changed its name to Praxair, Inc., a publicly traded company. Subsequent to the transfer of its industrial gas business, Union Carbide Corporation, the holding company, was merged into the chemicals subsidiary, Union Carbide Chemicals and Plastics Company Inc. (see attached Certificate of Merger). Upon the merger, Union Carbide Chemicals and Plastics Company Inc. changed its name back to Union Carbide Corporation. Thus Praxair, Inc. is the successor in interest to the Linden hydrogen plant.

2. UCC operates various facilities around the U.S. which hold EPA Identification Numbers and/or RCRA permits. With respect to the subject of the instant inquiry, only the Linden, New Jersey hydrogen plant operated by UCC's former industrial gas business appears relevant. Records concerning this facility are currently maintained by Praxair, Inc., and UCC understands that Praxair will respond to this request with respect to the Linden facility.

3. As stated hereinabove, UCC's former industrial gas business operated a hydrogen transfill and repackaging plant on South Wood Avenue north of Tremley Point Road in Linden, Union County, New Jersey. This facility operated from 1957 to 1990. Prior to 1957 the property was owned by GAF Corporation but was vacant land. In 1957 property was leased by the Union Carbide Corporation - Linde Division. The business was sold in 1990 to Ultra Pure Compressed Gases, doing business at the same address. Operating files and records relevant to Linde's Linden hydrogen plant passed to Praxair in 1992 when UCC transferred its industrial gas business, and are currently maintained by Praxair. UCC notes that a copy of the information request was also directed to Praxair and understands that Praxair will make a complete response to this information request based on its own investigation of its records relevant to, and employees with knowledge of, operations at the Linden hydrogen facility.

4. Not applicable to UCC other than with respect to the former Linde industrial gas facility, for which UCC understands a response will be submitted by Praxair, Inc.

5 - 17. See response to question 4, above.

18. This response was prepared by the undersigned.

19. Mr. Edward DeBor of UCC's Corporate Records Archive facility conducted search for information relevant to the LCP Chemicals site in connection with UCC's response to this request.

20. UCC notes that CERCLA does not require a certification with respect to a response to an information request. However, please be assured that UCC has conducted a diligent search for records and information responsive to this request for information. We are also prepared to supplement this response in the event that we uncover additional responsive information or information which suggests that the information provided herein may be inaccurate.

Please contact the undersigned if you have any questions with respect to this response.

Sincerely yours,



Roger Florio

cc: Mr. Muthu Sundram, Esq.
Office of Regional Counsel
U.S. Environmental Protection Agency, Region 2
290 Broadway, 17th Floor
New York, New York 10007

Richard Tisch, Esq., Praxair, Inc. (w/out attachments)

M.E. Tapp, UCC (w/out attachments)

I, JOHN MACDONALD, Assistant Secretary of UNION CARBIDE CORPORATION, a New York corporation, DO HEREBY CERTIFY that the attached is a true and correct copy of the Certificate of Merger of Union Carbide Corporation into Union Carbide Chemicals and Plastics Company Inc., as filed with the Secretary of State of the State of New York on April 27, 1994.

I DO HEREBY FURTHER CERTIFY that, effective May 1, 1994, Union Carbide Chemicals and Plastics Company Inc. changed its name to Union Carbide Corporation.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the corporate seal of said UNION CARBIDE CORPORATION this 31st day of May, 1994.

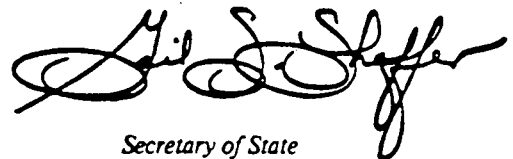

Assistant Secretary

**State of New York } ss:
Department of State }**

I hereby certify that I have compared the annexed copy with the original document filed by the Department of State and that the same is a correct transcript of said original.

Witness my hand and seal of the Department of State on

APR 27 1994

A handwritten signature in cursive script, appearing to read "David J. Shaffer".

Secretary of State

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CT07

CT07

**CERTIFICATE OF MERGER OF
UNION CARBIDE CORPORATION
INTO**

UNION CARBIDE CHEMICALS AND PLASTICS COMPANY INC.

UNDER SECTION 905 OF THE BUSINESS CORPORATION LAW

The undersigned William H. Joyce and John Macdonald, being respectively the President and Assistant Secretary of Union Carbide Chemicals and Plastics Company Inc., hereby certify as follows:

1. (a) The name of the corporation to be merged is Union Carbide Corporation. The name under which Union Carbide Corporation was formed was UCC Holdings, Inc. The certificate of incorporation of Union Carbide Corporation was filed in the office of the Secretary of State of the State of New York on January 3, 1989.

(b) The name of the surviving corporation is Union Carbide Chemicals and Plastics Company Inc. The name under which Union Carbide Chemicals and Plastics Company Inc. was formed was Union Carbide and Carbon Corporation. The certificate of incorporation of Union Carbide Chemicals and Plastics Company Inc. was filed in the office of the Secretary of State of the State of New York on November 1, 1917.

2. (a) The designation and number of outstanding shares of each class of Union Carbide Corporation are:

<u>Class Designation</u>	<u>Series</u>	<u>Number of Outstanding Shares</u>	
Common Stock		151,262,898	shares
Preferred Stock	ESOP Convertible Preferred Stock	16,668,893	shares

(b) None of the shares referred to in (a) above are owned by Union Carbide Chemicals and Plastics Company Inc. as of the date hereof. Prior to the effective date of the merger, Union Carbide Corporation plans to transfer to Union Carbide Chemicals and Plastics Company Inc. up to 3,346,771 shares of its Common Stock held in treasury.

(c) The designation and number of outstanding shares of each class of Union Carbide Chemicals and Plastics Company Inc. are:

<u>Class Designation</u>	<u>Number of Outstanding Shares</u>
Common Stock	100 shares
Preferred Stock	No shares

(d) All of the outstanding shares referred to in (c) above are owned by Union Carbide Corporation.

(e) The number of shares outstanding referred to in (a) above may change prior to the effective date of the merger as a result of the issuance or purchase from time to time of such shares by Union Carbide Corporation pursuant to stock options, employee benefit plans, outstanding puts and calls, a stock purchase plan previously announced and other commitments of Union Carbide Corporation to issue or purchase shares.

3. (a) Upon the effective date of the merger, each outstanding share of Common Stock of Union Carbide Corporation shall be converted into one share of

2

Common Stock of Union Carbide Chemicals and Plastics Company Inc. and each outstanding share of ESOP Convertible Preferred Stock of Union Carbide Corporation shall be converted into one share of ESOP Convertible Preferred Stock of Union Carbide Chemicals and Plastics Company Inc.

(b) Upon the effective date of the merger, each share of Common Stock of Union Carbide Chemicals and Plastics Company Inc. outstanding immediately prior to the merger shall be canceled.

(c) Upon the effective date of the merger, the shares of Common Stock of Union Carbide Chemicals and Plastics Company Inc. into which shares of Union Carbide Corporation are to be converted will be issued to the holders of Union Carbide Corporation Common Stock on a pro-rata basis and the shares of ESOP Convertible Preferred Stock of Union Carbide Chemicals and Plastics Company Inc. into which shares of Union Carbide Corporation are to be converted will be issued to the holders of Union Carbide Corporation ESOP Convertible Preferred Stock on a pro-rata basis.

4. Upon the merger, paragraph 1 of the Certificate of Incorporation of Union Carbide Chemicals and Plastics Company Inc., which sets forth the name of such corporation, shall be amended to read in its entirety as follows:

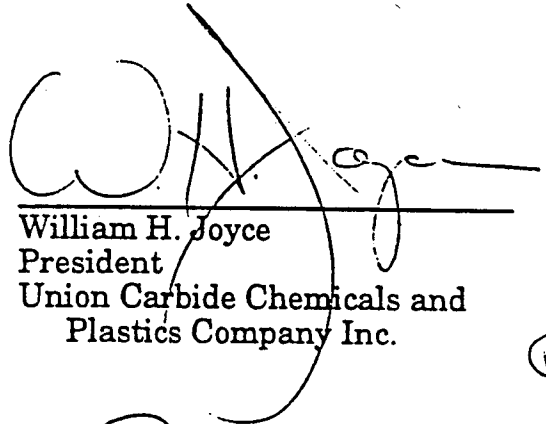
1. The name of the Corporation is Union Carbide Corporation.

5. The effective date of the merger shall be May 1, 1994.

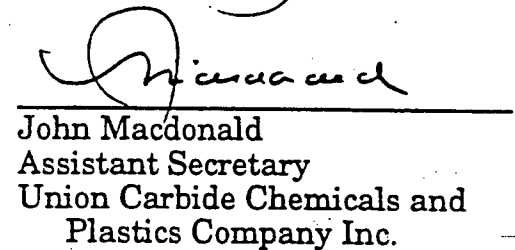
6. The plan of merger was adopted by the Board of Directors of Union Carbide Corporation on February 23, 1994.

7. The merger has been approved by the shareholders of Union Carbide Corporation on April 27, 1994 in accordance with paragraph (a) of Section 903 (Authorization by Shareholders) of the Business Corporation Law.

IN WITNESS WHEREOF, the undersigned have signed this Certificate of Merger this 27th day of April, 1994 and affirm the statements contained herein as true under the penalties of perjury.



William H. Joyce
President
Union Carbide Chemicals and
Plastics Company Inc.



John Macdonald
Assistant Secretary
Union Carbide Chemicals and
Plastics Company Inc.

F 940427000525

(2)

CT02

CERTIFICATE OF MERGER OF
UNION CARBIDE CORPORATION
INTO

UNION CARBIDE CHEMICALS AND PLASTICS COMPANY INC.

UNDER SECTION 905 OF THE BUSINESS CORPORATION LAW

RECEIVED

APR 27 1 46 PM '94

JW

3-CC
STATE OF NEW YORK
DEPARTMENT OF STATE

FILED APR 27 1994

TAX \$ 0

BY: JW

NEW YORK

UNION CARBIDE CORPORATION
39 OLD RIDGEBURY ROAD
DANBURY, CT 06817-0001

BILLED

940427000563

F 940302000373

CT 02

CT 02

**RESTATED CERTIFICATE OF INCORPORATION
OF
UNION CARBIDE CORPORATION**

UNDER SECTION 807 OF THE BUSINESS CORPORATION LAW

The undersigned William H. Joyce and John Macdonald, being respectively the President and Assistant Secretary of Union Carbide Corporation, hereby certify as follows:

1. The name of the Corporation is Union Carbide Corporation. The name under which the Corporation was formed was Union Carbide and Carbon Corporation.
2. The certificate of incorporation was filed in the Office of the Secretary of State of the State of New York on November 1, 1917.
3. This restatement of the certificate of incorporation of the Corporation was authorized by unanimous written consent of the Board of Directors of the Corporation.
4. The certificate of incorporation, as heretofore amended and changed to date, is hereby restated, without further amendment or change, to read in its entirety as follows:

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CERTIFICATE OF INCORPORATION
OF
UNION CARBIDE CORPORATION
UNDER SECTION 402 OF THE BUSINESS CORPORATION LAW

1. The name of the Corporation is Union Carbide Corporation.
2. The Corporation may engage in any lawful act or activity for which corporations may be organized under the Business Corporation Law provided that the Corporation is not formed to engage in any act or activity which requires the consent or approval of any state official, department, board, agency or other body, without such consent or approval first being obtained.
3. The total number of shares that the Corporation may issue is 525,000,000, of which 500,000,000 shall be shares of Common Stock, par value \$1.00 each, and 25,000,000 shall be shares of Preferred Stock, par value \$1.00 each.
 - (a) The holders of the Common Stock shall be entitled to one vote per share on all matters upon which stockholders are entitled to vote and shall not be entitled to any preference in the distribution of dividends or assets.
 - (b) The Preferred Stock may be issued from time to time in series. Each share of a series shall be equal to every other share of the same series. The Board of Directors is authorized to establish and designate series and to fix the number of shares and the relative rights, preferences and limitations as between series, subject to such limitations as may be prescribed by law. In particular, the Board of Directors may

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establish, designate and fix the following with respect to each series of Preferred Stock:

- (1) The distinctive serial designation of the shares of the series which shall distinguish those shares from the shares of all other series;
- (2) The number of shares included in the series, which may be increased or decreased from time to time unless otherwise provided by the Board of Directors in creating the series;
- (3) The annual dividend rate for the shares of the series and the date or dates upon which such dividends shall be payable;
- (4) Whether dividends on the shares of the series shall be cumulative and, on the shares of any series having cumulative dividend rights, the date or dates or method of determining the date or dates from which dividends on the shares of the series shall be cumulative;
- (5) The amount or amounts which shall be paid out of the assets of the Corporation to the holders of the shares of the series upon the involuntary liquidation, dissolution or winding up of the Corporation and upon the voluntary liquidation, dissolution or winding up of the Corporation;
- (6) The price or prices at which, the period or periods within which and the terms and conditions upon which the shares of the series may be redeemed in whole or in part, at the option of the Corporation;
- (7) The obligation, if any, of the Corporation to purchase or redeem shares of the series pursuant to a sinking fund and the price or prices at which, the period or periods within which and the terms and conditions upon which the shares of the series shall be redeemed, in whole or in part, pursuant to such sinking fund;
- (8) The period or periods within which and the terms and conditions, if any, including the price or prices or the rate or rates of conversion and the terms and conditions of any adjustments thereof, upon which the shares of the series shall be convertible at the option of the holder into shares of any class of stock or into shares of any other series of Preferred Stock, except into a class of shares having rights or preferences as to dividends or distributions of assets upon liquidation which are prior or superior in rank to those of the shares being converted;
- (9) The voting rights, if any, of the shares of the series in addition to those required by law, including the number of votes per share and the transaction of any business or of any specified

item of business in connection with which the shares of the series shall vote as a class; and

(10) Any other relative rights, preferences, or limitations of the shares of the series not inconsistent herewith or with applicable law.

(c) ESOP CONVERTIBLE PREFERRED STOCK

Section 1. Definitions, Designation and Issuance.

1.01 Definitions. For purposes of this subparagraph (c):

"BCL" means the Business Corporation Law of the State of New York, as amended from time to time.

"Board" means the Board of Directors of the Corporation or any authorized committee of the Board.

"Code" means the Internal Revenue Code of 1986, as amended from time to time.

"Common Stock" means the shares of common stock, par value \$1.00 each, authorized by paragraph 3 of the Certificate of Incorporation of the Corporation.

"Conversion Price" means \$8.981 per share, as such may be adjusted from time to time as provided herein.

"Dividend Payment Date" means the Quarterly Payment Date or such other dates as the Board may designate for payment of Preferred Dividends in conjunction with an election to cause Preferred Dividends to become payable on an annual or semi-annual basis.

"Dividend Redemption" means a redemption of ESOP Shares, at the election of the Holder, in connection with any Preferred Dividend.

"ERISA" means the Employee Retirement Income Security Act of 1974, as amended from time to time.

"ESOP Preferred Stock" or "ESOP Shares" means the ESOP Convertible Preferred Stock as designated in Subsection 1.02.

"Holder" means the Trustee holding ESOP Shares.

"Junior Stock" means the Common Stock and any series of stock ranking junior to the ESOP Preferred Stock as to dividends or upon dissolution.

"Liquidation Price" means \$8.981 per share as such may be subject to adjustment from time to time as provided herein.

"Parity Stock" means any series of stock ranking on a parity with the ESOP Preferred Stock as to dividends.

"Plan" means the Union Carbide Corporation Employee Stock Ownership Plan which forms a part of the Union Carbide Corporation Savings Program.

"Preferred Dividend Rate" means the amount per year specified in Subsection 2.01, as such amount may be adjusted from time to time pursuant to the terms hereof.

"Preferred Dividends" means cash dividends, when as and if declared by the Board out of funds legally available therefor, with respect to ESOP Preferred Stock.

"Quarterly Payment Date" means, at any time that Preferred Dividends are paid on a quarterly basis, the dates determined from time to time by the Board pursuant to Subsection 2.01 for payment of Preferred Dividends.

"Rights" means rights to purchase Common Stock (or other securities in lieu thereof) pursuant to the Rights Agreement between the Corporation and Chemical Bank, Rights Agent, as such agreement may be amended from time to time, or any rights issued to holders of Common Stock in addition thereto or in replacement therefor.

"Special Redemption Price" means, in connection with a redemption pursuant to Subsection 7.01, a redemption price equal to the higher of (a) the Liquidation Price per share of ESOP Preferred Stock on the date fixed for redemption and (b) the Fair Market Value (as defined in Subsection 9.01) of the number of shares of Common Stock into which each ESOP Share is convertible at the time the notice of such redemption is given, plus in either case an amount equal to accrued (whether or not accumulated) and unpaid dividends thereon to the date fixed for redemption.

"Transfer" means any sale, transfer or other disposition of ESOP Shares other than to the Corporation.

"Trustee" means a trustee or trustees acting on behalf of the trust established in connection with the Plan.

1.02 Designation. Of the 25,000,000 authorized shares of Preferred Stock, par value \$1.00 each, 16,668,893 shares shall be designated ESOP CONVERTIBLE PREFERRED STOCK. The Board may from time to time, by resolution, fix such number of shares to an increased or decreased number. However, no such decrease shall reduce the number of ESOP Shares to a number less than that number of ESOP Shares then outstanding. If the Corporation redeems or purchases any ESOP Shares, such ESOP Shares (a)

shall remain issued and outstanding for all purposes (except that as long as such shares are held by the Corporation, no dividends shall be paid on such shares and they shall neither be entitled to vote nor counted for quorum purposes) and (b) may thereafter be transferred by the Corporation from time to time to the Trustee, and upon such transfer the voting and dividend rights of such shares shall be restored. However, the Corporation may, at the time of or at any time after such redemption or purchase, retire any such shares then held by the Corporation, and such shares shall then be restored to the status of authorized but unissued shares of Preferred Stock of the Corporation.

1.03 Issuance. ESOP Shares shall be issued only to the Trustee. In the event of any Transfer to any person (including, without limitation, any participant in the Plan) other than (a) any Trustee or (b) any pledgee (other than the Corporation or any subsidiary of the Corporation) of such ESOP Shares acquiring such ESOP Shares as security for any loan or loans made to the Plan or to any Trustee, the ESOP Shares so Transferred shall, upon such Transfer and without any further action by the Corporation or the Holder, be automatically converted into shares of Common Stock at the Conversion Price and on the terms otherwise provided for conversions pursuant to Section 5. No such transferee shall have any of the voting powers, preferences and relative, participating, optional or special rights ascribed to the ESOP Shares hereunder, but, shall have only the powers and rights pertaining to the Common Stock into which such ESOP Shares shall be so converted. However, in the event of a foreclosure or other realization upon the ESOP Shares pledged as security for any loan or loans made to the Plan or to the Trustee (other than by the Corporation or any subsidiary of the Corporation), the pledged ESOP Shares so foreclosed or otherwise realized upon shall be converted automatically into shares of Common Stock at the Conversion Price and on the terms otherwise provided for conversions pursuant to Section 5. In the event of such a conversion, the transferee shall be treated for all purposes as the record holder of the shares of Common Stock into which the ESOP Shares shall have been converted as of the date of such conversion. Certificates representing ESOP Shares shall be legended to reflect the restrictions on transfer set forth above. Notwithstanding the foregoing provisions of this Subsection 1.03, ESOP Shares (x) may be converted into shares of Common Stock as provided by Section 5 and the shares of Common Stock issued upon such conversion may be transferred by the holder thereof as permitted by law and (y) shall be redeemable by the Corporation upon the terms and conditions provided by Sections 6, 7 and 8.

Section 2. Dividends and Distributions.

2.01 Dividends. The Holder shall, subject to the provisions for adjustment hereinafter set forth, be entitled to receive Preferred Dividends payable in an amount initially equal to \$0.794 per share per year, and no more, on a quarterly basis, on the last business day of each calendar quarter (or such later date not more than five business days thereafter as the Board may from time to time elect in its absolute discretion), beginning on the second Quarterly Payment Date occurring in 1994. However, the Board may in its absolute discretion elect to cause Preferred Dividends to become payable on an annual

or semi-annual basis if such election is made effective during the period beginning on January 5 and ending on March 30 in each year. The Corporation shall give prompt notice to the Holder of (a) any election to cause Preferred Dividends to become payable on an annual or semi-annual basis and (b) the Dividend Payment Date from time to time determined by the Board. Preferred Dividends shall be made to the Holder at the opening of business on each applicable Dividend Payment Date.

2.02 Cumulation. Dividends in respect of ESOP Shares shall begin to accrue from April 1, 1994, except that with respect to any ESOP Shares redeemed or purchased by the Corporation and then reissued, dividends shall accrue on such shares from their date of reissuance. Dividends shall accrue on a daily basis, whether or not the Corporation shall then have earnings or surplus (computed on the basis of a 360-day year of 30-day months in case of any period less than one year), based on the Preferred Dividend Rate then in effect. However, if the Board elects to cause Preferred Dividends to be payable on an annual or semi-annual basis, payments in respect of dividends on ESOP Preferred Stock made after the effective date of such election shall be computed using the Preferred Dividend Rate in effect on the Dividend Payment Date as determined by the Board. Accrued but unpaid Preferred Dividends shall cumulate as of the Dividend Payment Date on which they first become payable. No interest shall accrue on accumulated but unpaid Preferred Dividends.

2.03 Distributions. So long as any ESOP Preferred Stock shall be outstanding, no dividend shall be declared or paid or set apart for payment on any Parity Stock unless there shall also be or have been declared and paid or set apart for payment on the ESOP Preferred Stock, like dividends for all dividend payment periods of the ESOP Preferred Stock ending on or before the dividend payment date of the Parity Stock, ratably in proportion to the respective amounts of dividends (a) accumulated and unpaid or payable on the Parity Stock, and (b) accumulated and unpaid through the dividend payment period or periods of the ESOP Preferred Stock next preceding such dividend payment date. The Corporation shall not declare or pay or set apart for payment any dividends or make any other distributions on, or make any payment on account of the purchase, redemption or other retirement of any Junior Stock until full cumulative dividends on the ESOP Preferred Stock shall have been declared and paid or set apart for payment when due. However, the foregoing sentence shall not apply to (x) any dividend or distribution payable solely in any shares of, or options, warrants or rights to subscribe for or purchase shares of, any Junior Stock or (y) the acquisition of shares of any Junior Stock in exchange solely for or by conversion solely into shares of any other Junior Stock or (z) any payment on account of the redemption of the Rights. Any Preferred Dividend shall first be credited against the earliest accumulated but unpaid dividend due with respect to ESOP Preferred Stock.

Section 3. Liquidation Preference.

3.01 Liquidation Price. In the event of any dissolution or liquidation of the Corporation, whether voluntary or involuntary, before any payment or distribution of the assets of the Corporation (whether capital or surplus) shall

be made to or set apart for the holders of any series or class or classes of stock of the Corporation ranking junior to ESOP Preferred Stock upon dissolution or liquidation, the Holder shall be entitled to receive the Liquidation Price per share in effect at the time of dissolution or liquidation plus an amount equal to all dividends accrued (whether or not accumulated) and unpaid to the date of final distribution to such Holder, and such Holder shall not be entitled to receive any further payments. If, upon any dissolution or liquidation of the Corporation, the assets of the Corporation, or proceeds thereof, distributable to the Holder shall be insufficient to pay in full the preferential amount aforesaid and liquidating payments on any other series ranking, as to dissolution or liquidation, on a parity with ESOP Preferred Stock, then such assets, or the proceeds thereof, shall be distributed to the Holder and any other such shares ratably in accordance with the respective amounts that would be payable on the ESOP Preferred Stock and any other such shares if all amounts payable thereon were paid in full. For the purposes of this Section 3, neither (a) the consolidation or merger of the Corporation with or into one or more corporations, (b) the sale, transfer, lease or exchange (for cash, shares of equity stock, securities or other consideration) of all or substantially all of the assets of the Corporation, nor (c) the distribution to the shareholders of the Corporation of all or substantially all of the consideration for such sale shall be deemed to be a dissolution or liquidation (voluntarily or involuntarily), unless such consideration (apart from assumption of liabilities) or the net proceeds thereof consists substantially entirely of cash. After payment shall have been made in full to the Holder as provided in this Subsection 3.01 the Holder shall not be entitled to share in the remaining assets of the Corporation.

Section 4. Ranking and Voting of Shares.

4.01 Ranking. Unless otherwise provided in this Certificate of Incorporation, as the same may be amended, relating to any subsequent series of Preferred Stock, the ESOP Preferred Stock shall rank on a parity with all series of Preferred Stock as to dividends and as to the distribution of assets upon dissolution or liquidation.

4.02 Voting Rights. The Holder shall have the following voting rights:-

(i) The Holder shall be entitled to vote on all matters submitted to a vote of the shareholders of the Corporation, voting together with the holders of Common Stock as one class. The Holder shall be entitled to a number of votes equal to the number of shares of Common Stock into which the ESOP Shares could be converted on the record date for determining the shareholders entitled to vote. Whenever the Conversion Price is adjusted as provided in Section 9, the number of votes of the ESOP Shares shall also be correspondingly adjusted.

(ii) Except as otherwise required by law or set forth herein, the Holder shall have no special voting rights and the consent of the Holder shall not be required (except to the extent the Holder is entitled to vote with holders of Common Stock as set forth herein) for the taking of any corporate action, including the issuance of any Preferred

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Stock now or hereafter authorized; provided, however, that the vote of at least a majority of the outstanding ESOP Shares, voting separately as a series, shall be necessary to authorize the amendment of the Certificate of Incorporation if the proposed amendment relates to any of the matters enumerated in Section 804 of the BCL.

Section 5. Conversion into Common Stock.

5.01 Conversion Price. The Holder shall be entitled to cause any or all of the ESOP Shares to be converted into shares of Common Stock at any time prior to the close of business on the date fixed for redemption of such shares pursuant to Sections 6, 7 or 8. The number of shares of Common Stock into which each ESOP Share may be converted shall be determined by dividing the Liquidation Price in effect at the time of conversion by the Conversion Price in effect at the time of conversion. The initial conversion rate is equivalent to one share of Common Stock for each ESOP Share, and is subject to adjustment as hereinafter provided.

5.02 Surrender of Certificates. The Holder shall convert ESOP Shares into shares of Common Stock by surrender, if certificated, of the certificate or certificates representing the ESOP Shares being converted, duly assigned or endorsed for transfer to the Corporation (or accompanied by duly executed stock powers relating thereto), or if uncertificated, a duly executed stock power relating thereto. Such conversion shall be effected at the principal executive office of the Corporation. The certificate or certificates shall be accompanied by a notice of conversion which shall specify (a) the number of ESOP Shares to be converted, (b) the name or names in which the Common Stock and any ESOP Shares not to be so converted are to be issued, and (c) the address to which delivery is to be made of a confirmation of such conversion, if uncertificated, or any new certificates which may be issued upon such conversion, if certificated.

5.03 Delivery of Common Stock Upon Conversion. The Corporation shall, upon receipt of a certificate representing the ESOP Shares for conversion, or if uncertificated, of a duly executed stock power relating thereto, issue and send by hand delivery (with receipt to be acknowledged) or by first class mail, to the Holder, at the address designated by the Holder, a certificate or certificates for, or if uncertificated, confirmation of, the number of shares of Common Stock to which the Holder shall be entitled upon conversion. If only part of the ESOP Shares surrendered are to be converted, the Corporation shall issue and deliver to the Holder a new certificate or certificates representing the number of ESOP Shares that shall not have been converted, or if uncertificated, confirmation of the number of ESOP Shares that shall not have been converted.

5.04 Effective Date of Issuance of Common Stock. The issuance of shares of Common Stock upon conversion of ESOP Shares shall be effective as of the earlier of (a) the delivery to the Holder of the certificates representing the shares of Common Stock issued upon conversion thereof, if certificated, or confirmation, if uncertificated, and (b) the commencement of business on the second business day after the surrender of the certificate or certificates, if

certificated, or a duly executed stock power, if uncertificated, for the ESOP Shares to be converted. The person or persons entitled to receive Common Stock issuable upon such conversion shall, on and after the effective date of conversion, be treated for all purposes as the record holder or holders of such shares of Common Stock, and no allowance or adjustment shall be made in respect of dividends payable to holders of Common Stock of record on any date prior to such effective date. The Corporation shall not be obligated to pay to the Holder any dividend that may have accrued or that may have been declared if the Dividend Payment Date for such dividend is on or subsequent to the effective date of conversion.

5.05 No Fractional Shares. The Corporation shall not be obligated to deliver any fractional share of Common Stock issuable upon any conversion of ESOP Shares, but in lieu thereof may make a cash payment in respect thereof in any manner permitted by law.

5.06 Common Stock Reserved. The Corporation shall at all times reserve and keep available out of its authorized and unissued Common Stock or treasury Common Stock, solely for issuance upon the conversion of ESOP Shares as herein provided, such number of shares of Common Stock as shall from time to time be issuable upon the conversion of all of the ESOP Shares then outstanding.

5.07 Issuance of Rights. Whenever the Corporation shall issue shares of Common Stock upon conversion of ESOP Shares as contemplated by this Section 5, the Corporation shall issue together with each such share of Common Stock one Right, whether or not the Rights shall be exercisable at such time, but only if the Rights are issued and outstanding and held by other holders of Common Stock at such time and have not expired.

Section 6. Redemption at the Option of the Corporation.

6.01 Redemption After December 31, 1998. At the option of the Corporation, ESOP Preferred Stock shall be redeemable, in whole or in part, at any time after December 31, 1998, out of funds legally available therefor, at a redemption price per share equal to the following percentages of the Liquidation Price in effect on the date fixed for redemption:

<u>During the Twelve- Month Period Beginning January 1,</u>	<u>Percentage of Liquidation Price</u>
1999	101.7750
2000	100.8875

and thereafter at 100%, plus, in each case, an amount equal to all accrued (whether or not accumulated) and unpaid dividends thereon to the date fixed for redemption.

6.02 Notice of Redemption. The Corporation shall deliver a notice of redemption to the Holder, by first class mail, mailed not less than 20 days nor more than 60 days prior to the redemption date. Each notice shall state: (a) the redemption date; (b) the total number of ESOP Shares to be redeemed; (c) the redemption price; (d) that the shares are to be surrendered at the principal office of the Corporation for payment of the redemption price; (e) that dividends on the shares to be redeemed will cease to accrue on such redemption date; (f) whether such redemption price will be paid in cash or in shares of Common Stock; and (g) the conversion rights of the shares to be redeemed, the period within which conversion rights may be exercised, and the Conversion Price and number of shares of Common Stock issuable upon conversion of an ESOP Share at such time.

6.03 Redemption if Change in Tax Law or Plan Does Not Qualify. In the event that:

(i) there shall be a change in the federal tax law or regulations of the United States of America or of an interpretation or application of such law or regulations or of a determination by a court of competent jurisdiction that in any case has the effect of precluding the Corporation from claiming (other than for purposes of calculating any alternative minimum tax) any of the tax deductions for dividends paid on the ESOP Preferred Stock when such dividends are used as provided under Section 404(k)(2) of the Code, as in effect on the date the ESOP Preferred Stock is initially issued, or

(ii) the Corporation shall certify to the Holder that the Corporation has determined in good faith that the Plan either is not qualified as a "stock bonus plan" within the meaning of Section 401(a) of the Code or is not an "employee stock ownership plan" within the meaning of 4975(e)(7) of the Code,

then, notwithstanding anything to the contrary in Subsection 6.01, the Corporation may, in its sole discretion, at any time within one year after either of the foregoing events, elect either to:

(a) redeem, out of funds legally available therefor, any or all of the ESOP Preferred Stock at a redemption price equal to the Liquidation Price per share on the date fixed for redemption, plus an amount equal to accrued (whether or not accumulated) and unpaid dividends thereon to the date fixed for redemption, or

(b) exchange for any or all of such ESOP Shares, securities of at least equal value (as determined by an independent appraiser) that constitute "qualifying employer securities" with respect to the Holder within the meaning of Section 409(1) of the Code and Section 407(d)(5) of ERISA, or any successor provisions of law.

If the Corporation elects to redeem any or all of the ESOP Preferred Stock pursuant to clause (a) above, a notice of redemption shall be given as required

in Subsection 6.02. If the Corporation elects to exchange securities for ESOP Preferred Stock pursuant to clause (b) above, it shall cause notice of such election to be sent to the Holder by first class mail, mailed not less than 20 days nor more than 60 days prior to the date of exchange. Each notice of election shall state: (i) the exchange date; (ii) the total number of ESOP Shares to be exchanged; (iii) the exchange rate; (iv) that the shares are to be surrendered for exchange at the principal office of the Corporation; and (v) that dividends on the shares to be exchanged will cease to accrue on such exchange date.

6.04 Redemption upon Termination of Plan. The Corporation may, in its sole discretion and notwithstanding anything to the contrary in Subsection 6.01, call for redemption any or all of the then outstanding ESOP Preferred Stock in the event that the Plan is, or contributions thereto are, terminated. Any such redemption shall be effected upon notice as required in Subsection 6.02. The redemption shall be made out of funds legally available therefor at a redemption price per share equal to the following percentages of the Liquidation Price in effect on the date fixed for redemption:

<u>During the Twelve- Month Period Beginning January 1,</u>	<u>Percentage of Liquidation Price</u>
1994	106.2125
1995	105.3250
1996	104.4375
1997	103.5500
1998	102.6625
1999	101.7750
2000	100.8875

and thereafter at 100%, plus, in each case, an amount equal to all accrued (whether or not accumulated) and unpaid dividends thereon to the date fixed for redemption.

6.05 Payment of Redemption Price. The Corporation, at its option, may make payment of the redemption price required upon redemption of ESOP Shares pursuant to this Section 6 in cash or in shares of Common Stock, or in a combination of such shares and cash. Any shares of Common Stock shall be valued for such purpose at their Fair Market Value (as defined in Subsection 9.01); provided, however, that in calculating their Fair Market Value, the Adjustment Period (as defined in Subsection 9.01) shall be deemed to be the five consecutive trading days preceding the date of redemption.

6.06 Effect of Redemption. Upon surrender of the certificates, if certificated, for any shares called for redemption, or upon the date fixed for redemption, if uncertificated, the Corporation shall, unless such shares have previously been converted, redeem such shares as of the close of business on the date fixed for redemption and at the redemption price set forth in Subsection 6.01, 6.03 or 6.04 as the case may be. From and after the date fixed

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for redemption, dividends on ESOP Shares called for redemption will cease to accrue and all rights of the Holder in respect of such shares shall cease, except the right to receive the redemption price. Upon payment of the redemption price, such shares shall be deemed to have been transferred to the Corporation, to be held as provided in Subsection 1.02.

Section 7. Redemption at the Option of the Holder.

7.01 Redemption to Provide for Plan Distributions. The Corporation shall, unless otherwise provided by law, redeem ESOP Shares at the option of the Holder when and to the extent necessary for the Holder to provide for distributions required to be made under, or to satisfy an investment election provided to participants in accordance with, the Plan or any successor plan or in connection with a Dividend Redemption. The Holder may exercise such option, at any time and from time to time, by delivering notice to the Corporation not less than five business days prior to the date fixed for redemption by the Holder in such notice. The redemption shall be made at a redemption price equal to the Special Redemption Price, in shares of Common Stock legally available therefor or, at the election of the Corporation, may be made out of funds legally available therefor in cash or a combination of Common Stock and cash. Shares of Common Stock shall be valued for purposes of redemption pursuant to this Subsection 7.01 as provided by Subsection 6.05. In the case of any Dividend Redemption, the Holder shall give the notice specified above on the tenth business day after the related Dividend Payment Date and such redemption shall be effective as to such number of ESOP Shares as shall equal (a) the aggregate amount of such Preferred Dividends paid with respect to ESOP Shares allocated or credited to the accounts of participants in the Plan or any successor plan that are used to repay any loan associated with such allocated or credited shares divided by (b) the Special Redemption Price specified above in this Subsection 7.01.

7.02 Redemption to Satisfy Plan Obligations or if Plan Does Not Qualify Under Certain Circumstances. The Corporation shall, unless otherwise provided by law, redeem ESOP Shares upon certification by the Holder to the Corporation of the following events:

(i) when and to the extent necessary for the Holder to make any payments of principal, interest or premium due and payable (whether voluntary, scheduled, upon acceleration or otherwise) upon any obligations of the trust established under the Plan in connection with the acquisition of ESOP Preferred Stock or any indebtedness, expenses or costs incurred by the Holder for the benefit of the Plan, or

(ii) when and if it shall be established to the satisfaction of the Holder that the Plan has not initially been determined by the Internal Revenue Service to be qualified as a "stock bonus plan" and an "employee stock ownership plan" within the meaning of Section 401(a) or 4975(e) (7) of the Code, respectively.

The Holder may exercise such option at any time and from time to time upon notice to the Corporation given not less than five business days prior to the date fixed for redemption by the Holder in such notice. A redemption pursuant to Subsection 7.02 shall be made in shares of Common Stock legally available therefor, at a redemption price equal to the Liquidation Price plus an amount equal to accrued and unpaid dividends thereon to the date fixed for redemption. At the election of the Corporation, such redemption may instead be made out of funds legally available therefor in cash or a combination of Common Stock and cash. Any shares of Common Stock shall be valued for the purposes of redemption pursuant to this Subsection 7.02 as provided by Subsection 6.05.

Section 8. Consolidation, Merger, etc.

8.01 Exchange for Qualifying Employer Securities. If the Corporation shall consummate any consolidation or merger or similar transaction, however named, pursuant to which the outstanding shares of Common Stock are by operation of law exchanged solely for, or changed, reclassified or converted solely into, securities of any successor or resulting company (including the Corporation) that constitute "qualifying employer securities" with respect to the Holder within the meanings of Section 409(l) of the Code and Section 407(d) (5) of ERISA, or any successor provision of law, and, if applicable, for a cash payment in lieu of fractional shares, if any, then, in such event,

(i) the terms of such consolidation or merger or similar transaction shall provide that the ESOP Shares shall be converted into or exchanged for and shall become preferred securities of such successor or resulting company, having in respect of such company insofar as possible (taking into account, without limitation, any requirements relating to the listing of such preferred securities on any national securities exchange or the qualification of such preferred securities for trading in any over-the-counter market) the same powers, preferences and relative, participating, optional or other special rights (including the redemption rights provided by Sections 6, 7 and 8), and the qualifications, limitations or restrictions thereon, that the ESOP Preferred Stock had immediately prior to such transaction,

(ii) after such transaction each security into which the ESOP Shares are so converted or for which they are exchanged shall be convertible, pursuant to the terms and conditions provided by Subsection 5.01, into the number and kind of qualifying employer securities receivable by the Holder equivalent to the number of shares of Common Stock into which the ESOP Shares could have been converted pursuant to Subsection 5.01 immediately prior to such transaction,

(iii) if by virtue of the structure of such transaction, a holder of Common Stock is required to make an election with respect to the nature and kind of consideration to be received in such transaction, which election cannot practicably be made by the Holder, then such election shall be deemed to be solely for "qualifying employer securities"

(together, if applicable, with a cash payment in lieu of fractional shares) with the effect provided in clauses (i) and (ii) above on the basis of the number and kind of qualifying employer securities receivable by the Holder of the number of shares of Common Stock into which the ESOP Shares could have been converted pursuant to Subsection 5.01 immediately prior to such transaction (it being understood that if the kind or amount of qualifying employer securities receivable in respect of each share of Common Stock upon such transaction is not the same for each such share, then the kind and amount of qualifying employer securities deemed to be receivable in respect of each share of Common Stock for purposes of this clause (iii) shall be the kind and amount so receivable per share of Common Stock by a plurality of such shares), and

(iv) the rights of the ESOP Preferred Stock as preferred equity of such successor or resulting company shall successively be subject to adjustments pursuant to Section 9 after any such transaction as nearly equivalent as practicable to the adjustments provided for by Section 9 prior to such transaction.

The Corporation shall not consummate any such merger, consolidation or similar transaction unless all the terms of this Subsection 8.01 are complied with.

8.02. Exchange for Non-Qualifying Employer Securities. If the Corporation shall consummate any consolidation or merger or similar transaction, however named, pursuant to which the outstanding shares of Common Stock are by operation of law exchanged for, or changed, reclassified or converted into, other shares or securities or cash or any other property, or any combination thereof, other than any such consideration which is constituted solely of qualifying employer securities that are common stock or common equity (as referred to in Subsection 8.01) and cash payments, if applicable, in lieu of fractional shares or other interests, the outstanding ESOP Shares shall, without any action on the part of the Corporation or the Holder thereof (but subject to Subsection 8.03), be automatically converted immediately prior to the consummation of such merger, consolidation or similar transaction into shares of Common Stock at the Conversion Price then in effect.

8.03. Redemption Alternative. If the Corporation shall enter into any agreement providing for any consolidation or merger or similar transaction described in Subsection 8.02, then the Corporation shall as soon as practicable thereafter (and in any event at least ten business days before consummation of such transaction) give notice of such agreement and the material terms thereof to the Holder. The Holder may elect, by notice of redemption to the Corporation, to receive, upon consummation of such transaction, in lieu of any cash or other securities which such holder would otherwise be entitled to receive under Subsection 8.02, a cash payment equal to a redemption price per share determined pursuant to Subsection 6.04, plus an amount equal to accrued (whether or not accumulated) and unpaid dividends thereon to the date fixed for such transaction. The cash payment shall be paid out of funds

legally available therefor, by the Corporation or the successor of the Corporation, in redemption of the ESOP Preferred Stock. No such notice of redemption shall be effective unless delivered to the Corporation prior to the close of business of the fifth business day prior to consummation of such transaction, unless the Corporation or the successor of the Corporation shall waive such prior notice. The Holder may withdraw the notice of redemption by delivery of a notice of withdrawal to the Corporation at any time prior to the close of business on the fifth business day prior to consummation of such transaction.

Section 9. Anti-dilution Adjustments.

9.01 Definitions. For purposes of this Section 9, the following definitions shall apply:

"Adjustment Period" means the period of five consecutive trading days, selected by the Corporation, during the 20 trading days preceding, and including, the date as of which the Fair Market Value of a security is to be determined.

"Current Market Price" means with respect to publicly traded shares of Common Stock or any other class of capital stock or other security of the Corporation or any other issuer, for a day, the last reported sales price, regular way, or, in case no sale takes place on such day, the average of the reported closing bid and asked prices, regular way, in either case as reported on the New York Stock Exchange Composite Tape or, if such security is not listed on the New York Stock Exchange, on the principal national securities exchange on which such security is listed, if not listed on any national securities exchange, on the National Association of Securities Dealers Automated Quotation System ("NASDAQ") National Market System or, if such security is not quoted on such National Market System, the average of the closing bid and asked prices on such day in the over-the-counter market as reported by NASDAQ or, if bid and asked prices for such security on such day shall not have been reported through NASDAQ, the average of the bid and asked prices for such day as furnished by any New York Stock Exchange member firm regularly making a market in such security selected for such purpose by the Corporation.

"Exchange Act" means the Securities Exchange Act of 1934, as amended from time to time.

"Extraordinary Distribution" means any dividend or other distribution to holders of Common Stock (effected while any of the ESOP Shares are outstanding) of (i) any shares of capital stock of the Corporation (other than shares of Common Stock), other securities of the Corporation (other than securities of the type referred to in Subsection 9.03), evidences of indebtedness of the Corporation or any other person or any other property (including shares of any subsidiary of the Corporation), or (ii) cash, or any combination of the foregoing, where the aggregate amount of such cash dividend or other distribution together with the amount of all cash dividends and other distributions made during the preceding period of twelve months, when

combined with the aggregate amount of all Pro Rata Repurchases (for this purpose, including only that portion of the aggregate purchase price of such Pro Rata Repurchase that is in excess of the Fair Market Value of the Common Stock repurchased as determined on the applicable expiration date (including all extensions thereof) of any tender offer or exchange offer that is a Pro Rata Repurchase, or the date of purchase with respect to any other Pro Rata Repurchase that is not a tender offer or exchange offer) made during such period, exceeds 12.5% of the aggregate Fair Market Value of all shares of Common Stock outstanding on the day before the ex-dividend date with respect to such Extraordinary Distribution that is paid in cash and on the distribution date with respect to an Extraordinary Distribution that is paid other than in cash.

The Fair Market Value of an Extraordinary Distribution for purposes of Subsection 9.05 shall be the sum of the Fair Market Value of such Extraordinary Distribution plus the aggregate amount of any cash dividends or other distributions that are not Extraordinary Distributions made during such twelve month period and not previously included in the calculation of an adjustment pursuant to Subsection 9.05, but shall exclude the aggregate amount of regular quarterly dividends declared by the Board and paid by the Corporation in such twelve month period.

"Fair Market Value" means,

(i) as to shares of Common Stock or any other class of capital stock or securities of the Corporation or any other issuer that are publicly traded, the average of the Current Market Price of such shares or securities for each day of the Adjustment Period, and

(ii) as to any security that is not publicly traded or of any other property means the fair value thereof as determined by an independent investment banking or appraisal firm experienced in the valuation of such securities or property selected in good faith by the Corporation, or, if no such investment banking or appraisal firm is in the good faith judgment of the Corporation available to make such determination, as determined in good faith by the Corporation.

"Non-Dilutive Amount" means, in respect of an issuance, sale or exchange by the Corporation of any right or warrant to purchase or acquire shares of Common Stock (including any security convertible into or exchangeable for shares of Common Stock), the difference between (a) the product of the Fair Market Value of a share of Common Stock on the day preceding the first public announcement of such issuance, sale or exchange multiplied by the maximum number of shares of Common Stock that could be acquired on such date upon the exercise in full of such rights or warrants (including upon the conversion or exchange of all such convertible or exchangeable securities), whether or not exercisable (or convertible or exchangeable) at such date, and (b) the aggregate amount payable pursuant to such right or warrant to purchase or acquire such maximum number of shares of Common Stock including the amount paid to acquire such right or warrant:

provided, however, that in no event shall the Non-Dilutive Amount be less than zero. For purposes of the foregoing, in the case of a security convertible into or exchangeable for shares of Common Stock, the amount payable pursuant to a right or warrant to purchase or acquire shares of Common Stock shall be the Fair Market Value of such security on the date of the issuance, sale or exchange of such security by the Corporation.

"Pro Rata Repurchase" means any purchase of shares of Common Stock by the Corporation or any subsidiary thereof, whether for cash, shares of capital stock or other securities of the Corporation, evidences of indebtedness of the Corporation or any other person or any other property (including shares of a subsidiary of the Corporation), or any combination thereof, effected while any of the ESOP Shares are outstanding, pursuant to any tender offer or exchange offer subject to Section 13(e) of the Exchange Act, or any successor provision of law, or pursuant to any other offer available to substantially all holders of Common Stock. However, no purchase of shares by the Corporation or any subsidiary thereof made in open market transactions shall be deemed a Pro Rata Repurchase. For purposes of this Subsection 9.01, shares shall be deemed to have been purchased by the Corporation or any subsidiary thereof "in open market transactions" if they have been purchased (a) substantially in accordance with the requirements of Rule 10b-18 as in effect under the Exchange Act on the date the ESOP Shares are initially issued by the Corporation or (b) on such other terms and conditions as the Corporation shall have determined are reasonably designed to prevent such purchases from having a material effect on the trading market for the Common Stock.

"Special Dividend" means a dividend in respect of ESOP Preferred Stock in shares of ESOP Preferred Stock.

9.02 Stock Dividend/Stock Split/Recapitalization.

(i) Subject to the provisions of Subsections 9.06 and 9.07, in the event the Corporation shall, at any time or from time to time while any of the ESOP Shares are outstanding, (a) pay a dividend or make a distribution in respect of the Common Stock in shares of Common Stock or (b) subdivide the outstanding shares of Common Stock into a greater number of shares, in each case whether by reclassification of shares, recapitalization of the Corporation (excluding a recapitalization or reclassification effected by a merger or consolidation to which Section 8 applies) or otherwise, then, in such event, the Board shall, to the extent legally permissible, declare a Special Dividend in such a manner that the Holder will become a holder of that number of ESOP Shares equal to the product of the number of shares held prior to such event multiplied by a fraction (the "Section 9.02 Fraction") as follows:

$$\frac{NA}{NB}$$

Where:

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NA = Number of shares of Common Stock outstanding immediately after such event.

NB = Number of shares of Common Stock outstanding immediately before such event.

A Special Dividend declared pursuant to this Subsection 9.02 shall be effective, upon payment of such dividend or distribution in respect of the Common Stock, as of the record date for the determination of shareholders entitled to receive such dividend or distribution (on a retroactive basis), and in the case of a subdivision shall become effective immediately as of the effective date thereof. Concurrently with the declaration of the Special Dividend pursuant to this Subsection 9.02, the Conversion Price, the Liquidation Price and the Preferred Dividend Rate of all ESOP Shares shall be adjusted by dividing the Conversion Price, the Liquidation Price and the Preferred Dividend Rate, respectively, in effect immediately before such event by the Section 9.02 Fraction.

(ii) Subject to the provisions of Subsections 9.06 and 9.07, in the event the Corporation shall, at any time or from time to time while any of the ESOP Shares are outstanding, combine the outstanding shares of Common Stock into a lesser number of shares, whether by reclassification of shares, recapitalization of the Corporation (excluding a recapitalization or reclassification effected by a merger, consolidation or other transaction to which Section 8 applies) or otherwise, then, in such event and effective immediately as of the effective date of such combination, the Holder will become a holder of that number of ESOP Shares equal to the number of ESOP Shares held prior to such event multiplied by the Section 9.02 Fraction. Concurrently, the Conversion Price, the Liquidation Price and the Preferred Dividend Rate of all ESOP Shares shall automatically be adjusted by dividing the Conversion Price, the Liquidation Price and the Preferred Dividend Rate, respectively, in effect immediately before such event by the Section 9.02 Fraction.

9.03 Rights or Warrants to Purchase Common Stock. Subject to the provisions of Subsections 9.06 and 9.07, in the event the Corporation shall, at any time or from time to time while any of the ESOP Shares are outstanding, issue to holders of shares of Common Stock as a dividend or distribution, including by way of a reclassification of shares or a recapitalization of the Corporation, any right or warrant to purchase shares of Common Stock (but not including as a right or warrant for this purpose any security convertible into or exchangeable for shares of Common Stock) for a consideration having a Fair Market Value per share less than the Fair Market Value of a share of Common Stock on the date of issuance of such right or warrant (other than pursuant to any employee or director incentive, compensation or benefit plan of the Corporation or any subsidiary of the Corporation heretofore or hereafter adopted), then, in such event, the Board shall, to the extent legally permissible, declare a Special Dividend in such a manner that the Holder will become a holder of that number of ESOP Shares equal to the product of the number of

shares held prior to such event multiplied by a fraction (the "Section 9.03 Fraction") as follows:

$$\frac{NB + M}{NB + F}$$

Where:

NB = Number of shares of Common Stock outstanding immediately before such issuance of rights or warrants.

M = Maximum number of shares of Common Stock that could be acquired upon exercise in full of all such rights and warrants.

F = Number of shares of Common Stock that could be purchased at the Fair Market Value of a share of Common Stock at the time of such issuance for the maximum aggregate consideration payable upon exercise in full of all rights and warrants.

A Special Dividend declared pursuant to this Section 9.03 shall be effective upon such issuance of rights or warrants. Concurrently with the declaration of the Special Dividend pursuant to this Section 9.03, the Conversion Price, the Liquidation Price and the Preferred Dividend Rate of all ESOP Shares shall be adjusted by dividing the Conversion Price, the Liquidation Price and the Preferred Dividend Rate, respectively, in effect immediately before such event by the Section 9.03 Fraction.

9.04 Sale of Common Stock for less than Fair Market Value.

(i) Subject to the provisions of Subsections 9.06 and 9.07, in the event the Corporation shall, at any time or from time to time while any of the ESOP Shares are outstanding, issue, sell or exchange shares of Common Stock (other than pursuant to (a) any right or warrant to purchase or acquire shares of Common Stock (including as such a right or warrant any security convertible into or exchangeable for shares of Common Stock) or (b) any employee or director incentive, compensation or benefit plan or arrangement of the Corporation or any subsidiary of the Corporation heretofore or hereafter adopted) for a consideration per share less than the Fair Market Value of a share of Common Stock on the date of such issuance, sale or exchange, then, in such event, the Board shall, to the extent legally permissible, declare a Special Dividend in such a manner that the Holder will become a holder of that number of ESOP Shares equal to the product of the number of shares held prior to such event multiplied by a fraction (the "Section 9.04(i) Fraction") as follows:

$$\frac{NB + I}{NB + F}$$

Where:

- NB = Number of shares of Common Stock outstanding immediately before such issuance, sale or exchange.
- I = Number of shares of Common Stock so issued, sold or exchanged.
- F = Number of shares of Common Stock that could be purchased at Fair Market Value of a share of Common Stock at the time of such issuance, sale or exchange for the maximum aggregate consideration paid therefor.

(ii) Subject to the provisions of Subsections 9.06 and 9.07, in the event the Corporation shall, at any time or from time to time while any of the ESOP Shares are outstanding, issue, sell or exchange any right or warrant to purchase or acquire shares of Common Stock (including as such a right or warrant any security convertible into or exchangeable for shares of Common Stock) other than pursuant to (a) any employee or director incentive, compensation or benefit plan or arrangement of the Corporation or any subsidiary of the Corporation heretofore or hereafter adopted or (b) any dividend or distribution on shares of Common Stock contemplated in Subsection 9.02 for a consideration having a Fair Market Value, on the date of such issuance, sale or exchange, less than the Non-Dilutive Amount, then, in such event, the Board shall, to the extent legally permissible, declare a Special Dividend in such manner that the Holder will become a holder of that number of ESOP Shares equal to the product of the number of shares held prior to such event times a fraction (the "Section 9.04 (ii) Fraction") as follows:

$$\frac{NB + M}{NB + N}$$

Where:

- NB - Number of shares of Common Stock outstanding immediately before such issuance of rights or warrants.
- M = Maximum number of shares of Common Stock that could be acquired upon exercise in full of all such rights and warrants.
- N = Number of shares of Common Stock that could be purchased at the Fair Market Value of a share of Common Stock at the time of such issuance for the total of (x) the maximum aggregate consideration payable at the time of the issuance, sale or exchange of such right or warrant and

(y) the maximum aggregate consideration payable upon exercise in full of all such rights or warrants.

A Special Dividend declared pursuant to this Subsection 9.04 shall be effective upon the effective date of such issuance, sale or exchange. Concurrently with the declaration of the Special Dividend pursuant to this Subsection 9.04, the Conversion Price, the Liquidation Price and the Preferred Dividend Rate of all ESOP Shares shall be adjusted by dividing the Conversion Price, the Liquidation Price and the Preferred Dividend Rate, respectively, in effect immediately before such event by the Section 9.04(i) Fraction or Section 9.04(ii) Fraction, as the case may be.

9.05 Extraordinary Distribution/Pro Rata Repurchase.

(i) Subject to the provisions of Subsections 9.06 and 9.07, in the event the Corporation shall, at any time or from time to time while any of the ESOP Shares are outstanding, make an Extraordinary Distribution in respect of the Common Stocks, whether by dividend, distribution, reclassification of shares or recapitalization of the Corporation (including capitalization or reclassification effected by a merger or consolidation to which Section 8 does not apply), then, in such event, the Board shall, to the extent legally permissible, declare a Special Dividend in such a manner that the Holder will become a holder of that number of ESOP Shares equal to the product of the number of such shares held prior to such event times a fraction (the "Section 9.05(i) Fraction") as follows:

$$\frac{NB \times F}{(NB \times F) - D}$$

Where:

NB = Number of shares of Common Stock outstanding immediately before such Extraordinary Distribution.

F = The Fair Market Value of a share of Common Stock on the day before the ex-dividend date with respect to an Extraordinary Distribution that is paid in cash and on the distribution date with respect to an Extraordinary Distribution that is paid in other than cash.

D = The Fair Market Value of the Extraordinary Distribution.

(ii) Subject to the provisions of Subsections 9.06 and 9.07, in the event the Corporation shall, at a any time or from time to time while any of the ESOP Shares are outstanding, effect a Pro Rata Repurchase of Common Stock, then in such event, the Board shall, to the extent legally permissible, declare a Special Dividend in such a manner that the Holder will become the holder of the number of ESOP Shares

equal to the product of the number of such shares held prior to such event times a fraction (the Section 9.05(ii) Fraction") as follows:

$$\frac{(NB - R) \times F}{(NB \times F) - A}$$

Where:

NB = Number of shares of Common Stock outstanding immediately before such Pro Rata Repurchase.

R = Number of shares of Common Stock repurchased by the Corporation.

F = The Fair Market Value of a share of Common Stock on the applicable expiration date (including all extensions thereof) of any tender offer that is a Pro Rata Repurchase or on the date of purchase with respect to any Pro Rata Repurchase that is not a tender offer.

A = The Fair Market Value of the aggregate purchase price of the Pro Rata Repurchase.

The Corporation shall deliver to the Holder (a) notice of its intent to make any Extraordinary Distribution and (b) notice of any offer by the Corporation to make a Pro Rata Repurchase, in each case at the same time as, or as soon as practicable after, such offer is first communicated to holders of Common Stock or, in the case of an Extraordinary Distribution, the announcement of a record date in accordance with the rules of any stock exchange on which the Common Stock is listed or admitted to trading. Such notice shall set forth the intended record date and the amount and nature of such dividend or distribution, or, if a Pro Rata Repurchase, (x) the number of shares subject to such offer, (y) the purchase price payable by the Corporation pursuant to such offer, and (z) the Conversion Price and the number of shares of Common Stock into which an ESOP Share may be converted at such time. Concurrently with a Special Dividend paid pursuant to this Subsection 9.05, the Conversion Price, the Liquidation Price and the Preferred Dividend Rate of all ESOP Shares shall be adjusted by dividing the Conversion Price, the Liquidation Price and the Preferred Dividend Rate, respectively, in effect immediately before such Extraordinary Distribution or Pro Rata Repurchase by the Section 9.05(i) Fraction or Section 9.05(ii) Fraction, as the case may be.

9.06 Adjustment Alternatives. Notwithstanding any other provision of this Section 9, the Corporation shall not be required to make (a) any Special Dividend, combination of shares or any adjustment of the Conversion Price, the Liquidation Price or the Preferred Dividend Rate unless such Special Dividend, combination of shares or adjustment would require an increase or decrease of at least one percent in the number of ESOP Shares outstanding, or, (b) if no additional ESOP Shares are issued, any adjustment of the Conversion Price unless such adjustment would require an increase or decrease of at least one

percent in the Conversion Price. Any lesser Special Dividend, combination of shares or adjustment shall be carried forward and shall be made no later than the time of, and together with, the next subsequent Special Dividend, combination of shares or adjustment which, together with any Special Dividend or Dividends, adjustment or adjustments so carried forward, shall amount to an increase or decrease of at least one percent of the number of ESOP Shares outstanding or, if no additional ESOP Shares are being issued, an increase or decrease of at least one percent of the Conversion Price, whichever the case may be.

9.07 Alternative to Special Dividend. The Corporation and the Board shall each use their best efforts to take all necessary steps or to take all actions as are reasonably necessary or appropriate for declaration of any Special Dividend or combination of shares provided in this Section 9, but shall not be required to call a special meeting of shareholders in order to implement the provisions thereof. If for any reason the Board is precluded from giving full effect to the Special Dividend provided in this Section 9, then no such Special Dividend shall be declared, but instead the Conversion Price shall automatically be adjusted by dividing the Conversion Price in effect immediately before the relevant event by the applicable Section 9.02, Section 9.03, Section 9.04(i), Section 9.04(ii), Section 9.05(i) or Section 9.05(ii) Fraction, and the Liquidation Price and the Preferred Dividend Rate will not be adjusted. An adjustment to the Conversion Price made pursuant to this Subsection 9.07 shall be given effect, (a) in the case of a payment of a dividend or distribution under Subsection 9.02(i), upon payment thereof as of the record date for the determination of holders entitled to receive such dividend or distribution (on a retroactive basis), and, in the case of a subdivision under Subsection 9.02(ii), immediately as of the effective date thereof, (b) in the case of Subsection 9.03, upon such issuance of rights or warrants, (c) in the case of Subsection 9.04, upon the effective date of a such issuance, sale or exchange, (d) in the case of an Extraordinary Distribution under Subsection 9.05(i), as of the record date for the determination of holders entitled to receive such Extraordinary Distribution (on a retroactive basis) and (e) in the case of a Pro Rata Repurchase under Subsection 9.05(ii), upon the expiration date thereof (if such Pro Rata Repurchase is a tender offer) or the effective date thereof (if such Pro Rata Repurchase is not a tender offer). If subsequently the Board is able to give full effect to the Special Dividend as provided in Subsections 9.02, 9.03, 9.04 or 9.05, then such Special Dividend will be declared and other adjustments will be made in accordance with the provisions of the applicable Subsection and the adjustment in the Conversion Price as provided in this Subsection 9.07 will automatically be reversed and nullified prospectively.

9.08 Equitable Adjustments. If (a) the Corporation shall make any dividend or distribution on the Common Stock or issue any Common Stock, other capital stock or other security of the Corporation or any rights or warrants to purchase or acquire any such security or effect any other similar corporate change, or (b) the Corporation shall otherwise be recapitalized, reorganized or restructured, and in either case the transaction (x) does not result in an adjustment pursuant to the foregoing provisions of this Section 9 or (y) does result in an adjustment pursuant to such provisions but the Board,

in its sole discretion, determines that under the circumstances the adjustment is inadequate, then in either case the Board may, in its sole discretion, determine whether an equitable adjustment should be made or an additional equitable adjustment should be made in respect of such transaction. If in such case the Board determines that some type of adjustment should be made, an adjustment shall be made effective as of such date as determined by the Board.

The Corporation shall be entitled, but not required, to make such additional adjustments, in addition to the foregoing provisions of this Section 9, as shall be necessary in order that any dividend or distribution in shares of capital stock of the Corporation, subdivision, reclassification or combination of shares of the Corporation or any recapitalization of the Corporation shall not be taxable to the holders of the Common Stock.

A determination of the Board made pursuant to this Subsection 9.08 shall be final and binding on the Corporation and all shareholders of the Corporation.

If the Corporation shall be required to (a) declare a Special Dividend or combination of shares and effect concurrent adjustments or (b) effect any adjustments in lieu of a Special Dividend, in each case pursuant to this Section 9, the Board may, in its sole discretion, modify the amount of the Special Dividend or combination of shares or any required adjustment for the benefit of the Holder to such extent as the Board deems equitable.

9.09 Documentation of Adjustments. Whenever an adjustment increasing the number of ESOP Shares outstanding is required pursuant hereto, the Board shall take action as is necessary so that a sufficient number of ESOP Shares are designated with respect to such increase resulting from such adjustment. Whenever an adjustment to the Conversion Price, the Liquidation Price or the Preferred Dividend Rate of the ESOP Preferred Stock is required pursuant hereto, the Corporation shall forthwith place on file with the transfer agent for the Common Stock and with the Treasurer of the Corporation a statement signed by the Treasurer or any Assistant Treasurer of the Corporation stating the adjusted Conversion Price, Liquidation Price and Preferred Dividend Rate determined as provided herein. Such statement shall set forth in reasonable detail such facts as shall be necessary to show the reason and the manner of computing such adjustment, including any determination of Fair Market Value involved in such computation. Promptly after each adjustment to the number of ESOP Shares outstanding, the Conversion Price, the Liquidation Price or the Preferred Dividend Rate, the Corporation shall mail a notice to the Holder stating the then prevailing number of ESOP Shares outstanding, the Conversion Price, the Liquidation Price and the Preferred Dividend Rate.

Section 10. Miscellaneous.

10.01 Notices. All notices referred to herein shall be in writing. All notices hereunder shall be deemed to have been given upon the earlier of receipt thereof or three business days after the mailing thereof. Notices shall

be addressed: (a) if to the Corporation, to its office at 39 Old Ridgebury Road, Danbury, Connecticut 06817-0001 (Attention: Secretary), (b) if to the Holder, at the address of the Holder as listed in the stock record books of the Corporation (which may include the records of any transfer agent for Common Stock) or (c) to such other address as the Corporation or the Holder, as the case may be, shall have designated by notice similarly given.

10.02 Stamp Taxes. The Corporation shall pay any and all stock transfer and documentary stamp taxes that may be payable in respect of any issuance or delivery of ESOP Shares or shares of Common Stock or other securities issued on account of ESOP Shares pursuant thereto or certificates representing such shares or securities. The Corporation shall not, however, be required to pay any such tax which may be payable in respect of any transfer involved in the issuance or delivery of ESOP Shares or Common Stock or other securities in a name other than that in which the ESOP Shares with respect to which such shares or other securities are issued or delivered were registered, or in respect of any payment to any person with respect to any such shares or securities other than a payment to the registered holder thereof, and shall not be required to make any such issuance, delivery or payment unless and until the person otherwise entitled to such issuance, delivery or payment has paid to the Corporation the amount of any such tax or has established, to the satisfaction of the Corporation, that such tax has been paid or is not payable.

10.03 Failure to Designate Recipient. In the event that the Holder shall not, by notice, designate the name in which shares of Common Stock to be issued upon conversion or exchange should be registered, or to whom payment upon redemption of ESOP Shares should be made or the address to which the certificate or certificates representing such shares, or such payment, should be sent, the Corporation shall be entitled to register such shares, and make such payment, in the name of the Holder and to send the certificate or certificates or other documentation representing such shares, or such payment, to the address of the Holder.

4. The holders of shares of stock of the Corporation shall have no preemptive rights to purchase any shares of stock or any other securities of the Corporation.

5. The number of directors of the Corporation shall be fixed and may from time to time be increased or decreased by resolution or other action of the Board of Directors, but in no event shall the number of directors be less than three or more than 19.

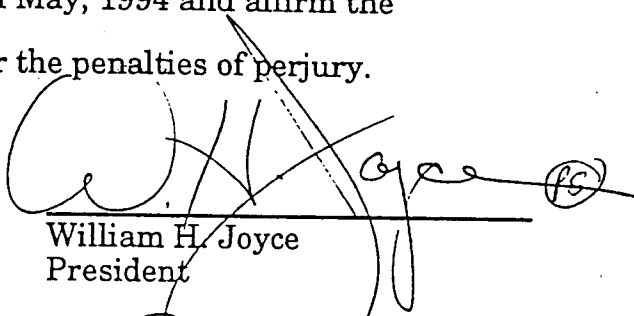
6. The office of the Corporation is to be located in the City of New York, County of New York. The Secretary of State of the State of New York is designated as the agent of the Corporation upon whom process in any action or proceeding against it may be served, and the address without the State to which the Secretary of State shall mail a copy of process in any action or proceeding against the Corporation which may be served upon him is:

Secretary
Union Carbide Corporation
39 Old Ridgebury Road
Danbury, Connecticut 06817-0001


7. The By-laws may be adopted, amended or repealed by the stockholders, or by the Board of Directors by a vote of a majority of the entire Board.

8. A person who is or was a director of the Corporation shall not be liable to the Corporation or its stockholders for damages for any breach of duty in such capacity, except to the extent such liability may not be eliminated or limited by applicable law from time to time in effect.

IN WITNESS WHEREOF, the undersigned have signed this Restated Certificate of Incorporation this 2nd day of May, 1994 and affirm the statements contained herein as true under the penalties of perjury.



William H. Joyce
President



John Macdonald
Assistant Secretary

CT02

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RESTATED CERTIFICATE OF INCORPORATION
OF
UNION CARBIDE CORPORATION

UNDER SECTION 807 OF THE BUSINESS CORPORATION LAW

RECEIVED

MAY 2 11 08 AM '94

mmr

UNION CARBIDE CORPORATION
39 OLD RIDGEBURY ROAD
DANBURY, CT 06817-0001

6 cc's
STATE OF NEW YORK
DEPARTMENT OF STATE
FILED MAY 02 1994
TAX \$ _____
BY: mmr
ny co.

940502000 405

BILLED
H

State of New York }
Department of State } ss:

I hereby certify that I have compared the annexed copy with the original document filed by the Department of State and that the same is a correct transcript of said original.

Witness my hand and seal of the Department of State on MAY 02 1994

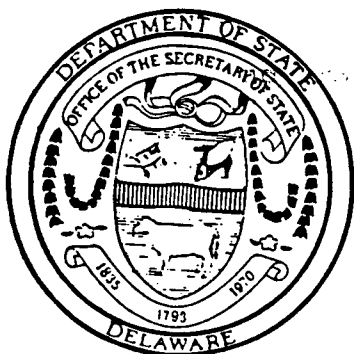

Secretary of State



Office of Secretary of State

I, MICHAEL RATCHFORD, SECRETARY OF STATE OF THE STATE OF DELAWARE, DO HEREBY CERTIFY THE ATTACHED IS A TRUE AND CORRECT COPY OF THE CERTIFICATE OF RESTATED CERTIFICATE OF INCORPORATION OF "UNION CARBIDE INDUSTRIAL GASES INC." FILED IN THIS OFFICE ON THE FIFTH DAY OF JUNE, A.D. 1992, AT 10 O'CLOCK A.M.

* * * * *



722157119


Michael Ratchford, Secretary of State

AUTHENTICATION: *3474790

DATE: 06/05/1992

RESTATED
CERTIFICATE OF INCORPORATION
of

UNION CARBIDE INDUSTRIAL GASES INC.

The undersigned certify that they are the Vice President and the Assistant Secretary, respectively, of Union Carbide Industrial Gases Inc. a corporation organized and existing under the laws of the State of Delaware (the "Corporation"), and do hereby certify as follows:

The date of filing of the original Certificate of Incorporation of the Corporation with the Secretary of State of the State of Delaware was October 26, 1988. The original name of the Corporation was "Union Carbide Industrial Gases Inc."

This Restated Certificate of Incorporation has been duly adopted in accordance with the applicable provisions of Sections 228, 242 and 245 of the General Corporation Law of the State of Delaware.

The text of the Certificate of Incorporation of the Corporation, as amended and restated, shall read in its entirety as follows:

ARTICLE I

NAME

The name of the Corporation is Praxair, Inc.

ARTICLE II

REGISTERED OFFICE

The address of its registered office in the State of Delaware is 1209 Orange Street, in the City of Wilmington, County of New Castle. The name of the registered agent at such address is The Corporation Trust Company.

ARTICLE III

PURPOSE; DURATION

The nature of the business or purposes to be conducted or promoted by the Corporation is to conduct any lawful business, to exercise any lawful purpose and power and to engage in any lawful act or activity for which corporations may be organized under the General Corporation Law of the State of Delaware, as the same may be amended from time to time. The Corporation is to have perpetual existence.

ARTICLE IV

CAPITALIZATION

The total number of shares of stock which the Corporation shall have authority to issue is 525,000,000 shares, with a par value of \$.01 each, amounting in the aggregate to \$5,250,000. Said shares shall consist of 25,000,000 shares of preferred stock and 500,000,000 shares of common stock.

A. Preferred Stock

1. The preferred stock of the Corporation may be issued from time to time in one or more series of any number of shares, provided that the aggregate number of shares issued and not cancelled in any and all such series shall not exceed the total number of shares of preferred stock hereinabove authorized.

2. Authority is hereby vested in the Board of Directors from time to time to authorize the issuance of one or more series of preferred stock and, in connection with the creation of such series, to fix by resolution or resolutions providing for the issuance of shares thereof the characteristics of each such series including, without limitation, the following:

(a) the maximum number of shares to constitute such series, which may subsequently be increased or decreased (but not below the number of shares of that series then outstanding) by resolution of the Board of Directors, the distinctive designation thereof and the stated value thereof if different than the par value thereof;

(b) whether the shares of such series shall have voting powers, full or limited, or no voting powers, and if any, the terms of such voting powers;

(c) the dividend rate, if any, on the shares of such series, the conditions and dates upon which such dividends shall be payable, the preference or relation which such dividends shall bear to the dividends payable on any other class or classes or on any other series of capital stock and whether such dividend shall be cumulative or non-cumulative;

(d) whether the shares of such series shall be subject to redemption by the Corporation, and, if made subject to redemption, the times, prices and other terms, limitations, restrictions or conditions of such redemption;

(e) the relative amounts, and the relative rights or preference, if any, of payment in respect of shares of such series, which the holders of shares of such series shall be entitled to receive upon the liquidation, dissolution or winding-up of the Corporation;

(f) whether or not the shares of such series shall be subject to the operation of a retirement or sinking fund and, if so, the extent to and manner in which any such retirement or sinking fund shall be applied to the purchase or redemption of the shares of such series for retirement or to other corporate purposes and the terms and provisions relative to the operation thereof;

(g) whether or not the shares of such series shall be convertible into, or exchangeable for, shares of any other class, classes or series, or other securities, whether or not issued by the Corporation, and if so convertible or exchangeable, the price or prices or the rate or rates of conversion or exchange and the method, if any, of adjusting same;

(h) the limitations and restrictions, if any, to be effective while any shares of such series are outstanding upon the payment of dividends or the making of other distributions on, and upon the purchase, redemption or other acquisition by the Corporation of, the Common Stock (as defined below) or any other class or classes of stock of the Corporation ranking junior to the shares of such

series either as to dividends or upon liquidation, dissolution or winding-up;

(i) the conditions or restrictions, if any, upon the creation of indebtedness of the Corporation or upon the issuance of any additional stock (including additional shares of such series or of any other series or of any other class) ranking on a parity with or prior to the shares of such series as to dividends or distribution of assets upon liquidation, dissolution or winding-up; and

(j) any other preference and relative, participating, optional or other special rights, and the qualifications, limitations or restrictions thereof, as shall not be inconsistent with law, this Article IV or any resolution of the Board of Directors pursuant hereto.

B. Common Stock

1. The common stock of the Corporation may be issued from time to time in one or more series of any number of shares, provided that the aggregate number of shares issued and not cancelled in any and all such series shall not exceed the total number of shares of common stock hereinabove authorized. Without limiting the generality of the foregoing, shares of a series of common stock consisting of 300,000,000 shares, or such larger number of shares as the Board of Directors shall from time to time fix by resolution or resolutions, may be issued from time to time by the Board of Directors. Shares of this series shall be designated, and are hereinafter called, "Common Stock." Each share of common stock of the Corporation outstanding as of June 5, 1992, shall be reclassified as one share of this series.

The holders of record of the Common Stock shall be entitled to the following rights:

(a) to vote at all meetings of stockholders of the Corporation, and such holders shall have one vote at all such meetings in respect of each share of Common Stock held of record by them;

(b) subject to the prior rights of the holders of all classes or series of stock at the time outstanding having prior rights as to dividends, to receive when, if and as declared by the Board of Directors out of the assets of the Corporation legally available therefor, such

dividends as may be declared by the Corporation from time to time to holders of Common Stock; and

(c) subject to the prior rights of the holders of all classes or series of stock at the time outstanding having prior rights as to distribution of assets upon liquidation, dissolution or winding-up, to receive the remaining assets of the Corporation upon liquidation, dissolution or winding-up.

2. Authority is hereby vested in the Board of Directors from time to time to authorize the issuance of shares of common stock in one or more additional series, and, in connection with the creation of such series, to fix by resolution or resolutions providing for the issuance of shares thereof the characteristics of each such additional series including, without limitation, the following:

(a) the maximum number of shares to constitute such series, which may subsequently be increased or decreased (but not below the number of shares of that series then outstanding) by resolution of the Board of Directors, and the distinctive designation thereof;

(b) whether the shares of such series shall have voting powers, full or limited, or no voting powers, and if any, the terms of such voting powers;

(c) the dividend rate, if any, on the shares of such series, the conditions and dates upon which such dividends shall be payable and the preference or relation which such dividends shall bear to the dividends payable on any other class or classes or on any other series of capital stock;

(d) whether the shares of such series shall be subject to redemption by the Corporation, and, if made subject to redemption, the times, prices and other terms, limitations, restrictions or conditions of such redemption;

(e) whether or not the shares of such series shall be convertible into, or exchangeable for, shares of any other class, classes or series, or other securities, whether or not issued by the Corporation, and if so convertible or exchangeable, the price or prices or the rate or rates of conversion or exchange and the method, if any, of adjusting same; and

(f) any other rights, and the qualifications, limitations or restrictions thereof, as shall not be inconsistent with law, this Article IV or any resolution of the Board of Directors pursuant hereto.

ARTICLE V

BOARD OF DIRECTORS

A. Number, Tenure and Qualifications of Directors; Removal. 1. The business and affairs of the Corporation shall be managed by or under the direction of a Board of Directors consisting of such number of directors as is determined from time to time by resolution adopted by affirmative vote of a majority of the entire Board of Directors; provided, however, that in no event shall the number of directors be less than three. The directors shall be divided into three classes, designated Class I, Class II and Class III. Each class shall consist, as nearly as may be possible, of one-third (1/3) of the total number of directors constituting the entire Board of Directors. By unanimous written consent of the Board of Directors, the initial classes shall be elected as follows: Class I directors shall be elected for a one-year term, Class II directors for a two-year term and Class III directors for a three-year term. At each succeeding annual meeting of stockholders, successors to the class of directors whose term expires at that annual meeting shall be elected for three-year terms. If the number of directors is changed, any increase or decrease shall be apportioned among the classes so as to maintain the number of directors in each class as nearly equal as possible, and any additional director of any class elected to fill a vacancy resulting from an increase in such class shall hold office for a term that shall coincide with the remaining term of that class, but in no case will a decrease in the number of directors shorten the term of any incumbent director. A director shall hold office until the annual meeting for the year in which his or her term expires and until his or her successor shall be elected and shall qualify, subject, however, to prior death, resignation, retirement, disqualification or removal from office. Except as otherwise required by law, any vacancy on the Board of Directors that results from an increase in the number of directors and any other vacancy occurring in the Board of Directors shall be filled by a majority of the directors then in office, even if less than a quorum, or by a sole remaining director. Any director elected to fill a vacancy not resulting from an increase in the number of directors shall have the same remaining term as that of his or her predecessor.

2. Any director, or the entire Board of Directors, may be removed from office only for cause and only by the affirmative vote of not less than a majority of the votes entitled to be cast by the holders of all the then outstanding shares of Voting Stock (as defined in Article VII, Section C), voting together as one class; provided, however, that if a proposal to remove a director is made by or on behalf of an Interested Person (as defined in Article VII, Section C) or a director who is not an Independent Director (as defined in Article VII, Section C), then such removal shall require the affirmative vote of not less than a majority of the votes entitled to be cast by the holders of all the then outstanding shares of Voting Stock, voting together as one class, excluding Voting Stock beneficially owned by such Interested Person.

3. Notwithstanding the foregoing, whenever the holders of any one or more classes or series of stock issued by the Corporation shall have the right, voting separately by class or series, to elect directors, the election, term of office, filling of vacancies and other features of such directorships shall be governed by the terms of this Restated Certificate of Incorporation applicable thereto, as amended, and such directors so elected shall not be divided into classes pursuant to this Article V, Section A unless expressly provided by such terms.

B. Additional Authority of Board. In furtherance and not in limitation of the powers conferred by statute, the Board of Directors is expressly authorized:

1. To make, alter, amend or repeal the By-laws of the Corporation. The holders of shares of Voting Stock shall, to the extent such power is at the time conferred on them by applicable law, also have the power to make, alter, amend or repeal the By-laws of the Corporation, provided that any proposal by or on behalf of an Interested Person or a director who is not an Independent Director to make, alter, amend or repeal the By-laws shall require approval by the affirmative vote described in Article VII, Section A, unless either (a) such action has been approved by a majority of the Board of Directors prior to such Interested Person first becoming an Interested Person or (b) prior to such Interested Person first becoming an Interested Person, a majority of the Board of Directors has approved such Interested Person becoming an Interested Person and, subsequently, a majority of the Independent Directors has approved such action.

2. To authorize and cause to be executed mortgages and liens upon the real and personal property of the Corporation.

3. To set apart out of any of the funds of the Corporation available for dividends a reserve or reserves for any proper purpose and to abolish any such reserve in the manner in which it was created.

4. By a majority of the whole Board of Directors, to designate one or more committees, each committee to consist of one or more of the directors of the Corporation. The Board of Directors may designate one or more directors as alternate members of any committee, who may replace any absent or disqualified member at any meeting of the committee. The By-laws may provide that in the absence or disqualification of a member of a committee, the member or members thereof present at any meeting and not disqualified from voting, whether or not he or they constitute a quorum, may unanimously appoint another member of the Board of Directors to act at the meeting in the place of any such absent, disqualified member. Any such committee, to the extent provided in the resolution of the Board of Directors, or in the By-laws of the Corporation, shall have and may exercise all the powers and authority of the Board of Directors in the management of the business and affairs of the Corporation, and may authorize the seal of the Corporation to be affixed to all papers which may require it; but no such committee shall have the power or authority in reference to amending the Restated Certificate of Incorporation (except that a committee may, to the extent authorized in the resolution or resolutions providing for the issuance of shares of stock adopted by the Board of Directors as provided in Article IV hereof, fix the designations and any of the preferences or rights of such shares relating to dividends, redemption, dissolution, any distribution of assets of the Corporation or the conversion into, or the exchange of such shares for, shares of any other class or classes or any other series of the same or any other class or classes of stock of the Corporation or fix the number of shares of any series of stock or authorize the increase or decrease of the shares of any series), adopting an agreement of merger or consolidation, recommending to the stockholders the sale, lease or exchange of all or substantially all of the Corporation's property and assets, recommending to the stockholders a dissolution of the Corporation or a revocation of a

dissolution, or amending the By-laws of the Corporation; and, unless the resolution or By-laws expressly so provide, no such committee shall have the power or authority to declare a dividend, to authorize the issuance of stock or to adopt a certificate of ownership and merger pursuant to Section 253 of the General Corporation Law of the State of Delaware.

5. When and as authorized by the stockholders in accordance with statute, to sell, lease or exchange all or substantially all of the property and assets of the Corporation, including its goodwill and its corporate franchises, upon such terms and conditions and for such consideration, which may consist in whole or in part of money or property including shares of stock in, and/or other securities of, any other corporation or corporations, as the Board of Directors shall deem expedient and for the best interests of the Corporation.

C. In addition to any other considerations which the Board of Directors may lawfully take into account, in determining whether to take or to refrain from taking corporate action on any matter, including proposing any matter to the stockholders of the Corporation, the Board of Directors may take into account the long-term as well as the short-term interests of the Corporation and its stockholders (including the possibility that these interests may be best served by the continued independence of the Corporation), customers, employees and other constituencies of the Corporation and its subsidiaries, including the effect upon communities in which the Corporation and its subsidiaries do business. In so evaluating any such determination, the Board of Directors shall be deemed to be performing their duties and acting in good faith and in the best interests of the Corporation within the meaning of Section 145 of the General Corporation Law of the State of Delaware, or any successor provision.

D. Nomination and Election of Directors. Subject to the rights of holders of any class or series of stock having a preference over the Common Stock as to dividends or upon liquidation, dissolution or winding-up, nominations for the election of directors may be made by the Board of Directors or a committee or person appointed by the Board of Directors or by any stockholder entitled to vote in the election of directors generally. However, any stockholder entitled to vote in the election of directors generally may nominate one or more persons for election as directors at an annual meeting only

pursuant to the Corporation's notice of such meeting or if written notice of such stockholder's intent to make such nomination or nominations has been received by the Secretary of the Corporation not less than sixty nor more than ninety days prior to the first anniversary of the preceding year's annual meeting; provided, however, that in the event that the date of the annual meeting is advanced by more than thirty days or delayed by more than sixty days from such anniversary, notice by the stockholder to be timely must be so received not earlier than the ninetieth day prior to such annual meeting and not later than the close of business on the later of (1) the sixtieth day prior to such annual meeting or (2) the tenth day following the day on which notice of the date of the annual meeting was mailed or public disclosure thereof was made by the Corporation, whichever first occurs. For purposes of calculating the first such notice period following adoption of this Restated Certificate of Incorporation, the first anniversary of the 1992 annual meeting shall be deemed to be May 15, 1993. Each such notice shall set forth: (a) the name and address of the stockholder who intends to make the nomination and of the person or persons to be nominated; (b) a representation that the stockholder is a holder of record of stock of the Corporation entitled to vote at such meeting and intends to appear in person or by proxy at the meeting to nominate the person or persons specified in the notice; (c) a description of all arrangements or understandings between the stockholder and each nominee and any other person or persons (naming such person or persons) relating to the nomination or nominations; (d) the class and number of shares of the Corporation which are beneficially owned by such stockholder and the person to be nominated as of the date of such stockholder's notice and by any other stockholders known by such stockholder to be supporting such nominees as of the date of such stockholder's notice; (e) such other information regarding each nominee proposed by such stockholder as would be required to be included in a proxy statement filed pursuant to the proxy rules of the Securities and Exchange Commission; and (f) the consent of each nominee to serve as a director of the Corporation if so elected.

In addition, in the event the Corporation calls a special meeting of stockholders for the purpose of electing one or more directors, any stockholder entitled to vote in the election of directors generally may nominate one or more persons for election as directors at a special meeting only pursuant to the Corporation's notice of meeting or if written notice of such stockholder's intent to make such nomination or nominations, setting forth the information and complying with the

form described in the immediately preceding paragraph, has been received by the Secretary of the Corporation not earlier than the ninetieth day prior to such special meeting and not later than the close of business on the later of (i) the sixtieth day prior to such special meeting or (ii) the tenth day following the day on which notice of the date of the special meeting was mailed or public disclosure thereof was made by the Corporation, whichever comes first.

No person shall be eligible for election as a director of the Corporation unless nominated in accordance with the procedures set forth in this Article V, Section D. The presiding officer of the meeting shall, if the facts warrant, determine and declare to the meeting that a nomination was not made in accordance with the procedures prescribed by this Article V, Section D, and if he or she should so determine, the defective nomination shall be disregarded.

Elections of directors need not be by written ballot unless the By-laws of the Corporation shall so provide.

ARTICLE VI

STOCKHOLDERS

A. Meetings of Stockholders; Books. Meetings of the stockholders may be held within or without the State of Delaware, as the By-laws may provide. Any action required or permitted to be taken by the stockholders of the Corporation must be effected at a duly called annual or special meeting of such stockholders and may not be effected by a consent in writing by any such holders. Subject to the rights of holders of any class or series of stock having a preference over the Common Stock as to dividends or upon liquidation, dissolution or winding-up, special meetings of the stockholders of the Corporation may be called only by the Board of Directors pursuant to a resolution approved by a majority of the entire Board of Directors. The books of the Corporation may be kept (subject to any provision contained in the statutes) outside the State of Delaware at such place or places as may be designated from time to time by the Board of Directors or in the By-laws of the Corporation.

Except as otherwise required by law or by this Restated Certificate of Incorporation, the holders of not less than a majority in voting power of the shares entitled to vote at any meeting of stockholders, present in person or by proxy,

shall constitute a quorum, and the act of the holders of a majority in voting power of the shares present in person or by proxy and entitled to vote on the subject matter shall be deemed the act of the stockholders. If a quorum shall fail to attend any meeting, the presiding officer may adjourn the meeting to another place, date or time. If a notice of any adjourned special meeting of stockholders is sent to all stockholders entitled to vote thereat, stating that it will be held with one-third (1/3) in voting power of the shares entitled to vote thereat constituting a quorum, then except as otherwise required by law, one-third (1/3) in voting power of the shares entitled to vote at such adjourned meeting, present in person or by proxy, shall constitute a quorum, and, except as otherwise required by law or this Restated Certificate of Incorporation, all matters shall be determined by the holders of a majority in voting power of the shares present in person or by proxy and entitled to vote on the subject matter.

B. Proposals of Stockholders. At any meeting of the stockholders, only such business shall be conducted as shall have been properly brought before such meeting. To be properly brought before an annual meeting, business must be (1) specified in the notice of meeting (or any supplement thereto) given by or at the direction of the Board of Directors, (2) otherwise properly brought before the meeting by or at the direction of the Board of Directors or (3) otherwise properly brought before the meeting by a stockholder. For business to be properly brought before an annual meeting by a stockholder, the stockholder must have given timely notice thereof in writing to the Secretary of the Corporation. To be timely, a stockholder's notice must be received not less than sixty days nor more than ninety days prior to the first anniversary of the preceding year's annual meeting; provided, however, that in the event that the date of the annual meeting is advanced by more than thirty days or delayed by more than sixty days from such anniversary, notice by the stockholder to be timely must be so received not earlier than the ninetieth day prior to such annual meeting and not later than the close of business on the later of (1) the sixtieth day prior to such annual meeting or (2) the tenth day following the date on which notice of the date of the annual meeting was mailed or public disclosure thereof was made, whichever first occurs. For purposes of calculating the first such notice period following adoption of this Restated Certificate of Incorporation, the first anniversary of the 1992 annual meeting shall be deemed to be May 15 1993. Each such notice shall set forth as to each matter the stockholder proposes to bring before the annual

meeting: (a) a brief description of the business desired to be brought before the annual meeting and the reasons for conducting such business at the meeting, (b) the name and address, as they appear on the Corporation's books, of the stockholder proposing such business, (c) the class, series and number of shares of the Corporation which are beneficially owned by the stockholder and (d) any material interest of the stockholder in such business. To be properly brought before a special meeting, business must be (i) specified in the notice of meeting (or any supplement thereto) given by or at the direction of the Board of Directors or (ii) otherwise properly brought before the meeting by or at the direction of the Board of Directors.

No business shall be conducted at any meeting of the stockholders except in accordance with the procedures set forth in this Article VI, Section B. The presiding officer of the meeting shall, if the facts warrant, determine and declare to the meeting that business was not properly brought before the meeting and in accordance with the provisions of this Article VI, Section B, and if he or she should so determine, any such business not properly brought before the meeting shall not be transacted. Nothing herein shall be deemed to affect any rights of stockholders to request inclusion of proposals in the Corporation's proxy statement pursuant to Rule 14a-8 under the Securities Exchange Act of 1934, as amended (the "Exchange Act").

ARTICLE VII

BUSINESS TRANSACTIONS

A. In addition to any affirmative vote required by law or this Restated Certificate of Incorporation or the By-laws of the Corporation, and except as otherwise expressly provided in Section B of this Article VII, a Business Transaction (as hereinafter defined) with, or proposed by or on behalf of, any Interested Person (as hereinafter defined) or any Affiliate (as hereinafter defined) of any Interested Person or any person who thereafter would be an Affiliate of such Interested Person shall require approval by the affirmative vote of not less than two-thirds (2/3) of the votes entitled to be cast by holders of all the then outstanding Voting Stock, voting together as one class, excluding Voting Stock beneficially owned by such Interested Person. Such affirmative vote shall be required notwithstanding the fact that no vote may be required, or that a lesser percentage may be specified, by law or in any agreement with any national securities exchange or otherwise.

B. The provisions of Section A of this Article VII shall not be applicable to any particular Business Transaction, and such Business Transaction shall require only such affirmative vote, if any, as is required by law or by any other provision of this Restated Certificate of Incorporation or the By-laws of the Corporation, or any agreement with any national securities exchange, if either (1) the Business Transaction shall have been approved by a majority of the Board of Directors prior to such Interested Person first becoming an Interested Person or (2) prior to such Interested Person first becoming an Interested Person, a majority of the Board of Directors shall have approved such Interested Person becoming an Interested Person and, subsequently, a majority of the Independent Directors (as hereinafter defined) shall have approved the Business Transaction.

C. The following definitions shall apply with respect to this Article VII:

1. The term "Affiliate" shall mean a person that directly, or indirectly through one or more intermediaries, controls, or is controlled by, or is under common control with, a specified person.

2. A person shall be a "beneficial owner" of any Capital Stock (a) which such person or any of its Affiliates beneficially owns, directly or indirectly; (b) which such person or any of its Affiliates has, directly or indirectly, (i) the right to acquire (whether such right is exercisable immediately or subject only to the passage of time or the occurrence of one or more events), pursuant to any agreement, arrangement or understanding or upon the exercise of conversion rights, exchange rights, warrants or options, or otherwise, or (ii) the right to vote pursuant to any agreement, arrangement or understanding; provided, however, that a person shall not be deemed the beneficial owner of any security if the agreement, arrangement or understanding to vote such security arises solely from a revocable proxy or consent solicitation made pursuant to and in accordance with the Exchange Act, and is not also then reportable on Schedule 13D under the Exchange Act (or a comparable or successor report); or (c) which is beneficially owned, directly or indirectly, by any other person with which such person or any of its Affiliates has any agreement, arrangement or understanding for the purpose of acquiring, holding, voting or disposing of any shares of Capital Stock (except to the extent permitted by the proviso of clause (b)(ii) above). For the purposes of determining whether a

person is an Interested Person pursuant to paragraph (6) of this Section C, the number of shares of Capital Stock deemed to be outstanding shall include shares deemed beneficially owned by such person through application of this paragraph (2) of Section C, but shall not include any other shares of Capital Stock that may be issuable pursuant to any agreement, arrangement or understanding, or upon exercise of conversion rights, warrants or options, or otherwise.

3. The term "Business Transaction" shall mean any of the following transactions when entered into by the Corporation or a subsidiary of the Corporation with, or upon a proposal by or on behalf of, any Interested Person or any Affiliate of any Interested Person:

(a) any merger or consolidation of the Corporation or any subsidiary with (i) any Interested Person, or (ii) any other corporation which is, or after such merger or consolidation would be, an Affiliate of an Interested Person;

(b) any sale, lease, exchange, mortgage, pledge, transfer or other disposition (in one transaction or a series of transactions), except proportionately as a stockholder of the Corporation, to or with the Interested Person of assets of the Corporation (other than Capital Stock (as hereinafter defined)) or of any subsidiary of the Corporation which assets have an aggregate market value equal to ten percent (10%) or more of the aggregate market value of all the outstanding stock of the Corporation;

(c) any transaction that results in the issuance of shares or the transfer of treasury shares by the Corporation or by any subsidiary of the Corporation of any Capital Stock or any capital stock of such subsidiary to the Interested Person, except (i) pursuant to the exercise, exchange or conversion of securities exercisable for, exchangeable for or convertible into stock of the Corporation or any such subsidiary which securities were outstanding prior to the time that the Interested Person became such, (ii) pursuant to a dividend or distribution paid or made, or the exercise, exchange or conversion of securities exercisable for, exchangeable for or convertible into stock of the Corporation or any such subsidiary which security is distributed, pro rata to all holders of a class or series of stock of the Corporation subsequent

to the time the Interested Person became such, (iii) pursuant to an exchange offer by the Corporation to purchase stock made on the same terms to all holders of said stock, (iv) any issuance of shares or transfer of treasury shares of Capital Stock by the Corporation, provided, however, that in the case of each of clauses (ii) through (iv) above there shall be no increase of more than one percent (1%) in the Interested Person's proportionate share of the Capital Stock of any class or series or of the Voting Stock or (v) pursuant to a public offering or private placement by the Corporation to an Institutional Investor;

(d) any reclassification of securities, recapitalization or other transaction involving the Corporation or any subsidiary of the Corporation which has the effect, directly or indirectly, of (i) increasing the proportionate share of the stock of any class or series, or securities convertible into the stock of any class or series, of the Corporation or of any such subsidiary which is owned by the Interested Person, except as a result of immaterial changes due to fractional share adjustments or as a result of any purchase or redemption of any shares of stock not caused, directly or indirectly, by the Interested Person or (ii) increasing the voting power, whether or not then exercisable, of an Interested Person in any class or series of stock of the Corporation or any subsidiary of the Corporation;

(e) the adoption of any plan or proposal by or on behalf of an Interested Person for the liquidation or dissolution of the Corporation; or

(f) any receipt by the Interested Person of the benefit, directly or indirectly (except proportionately as a stockholder of the Corporation), of any loans, advances, guarantees, pledges, tax benefits or other financial benefits (other than those expressly permitted in subparagraphs (a) through (e) above) provided by or through the Corporation or any subsidiary.

4. The term "Capital Stock" shall mean all capital stock of the Corporation authorized to be issued from time to time under Article IV of this Restated Certificate of Incorporation.

5. The term "Independent Directors" shall mean the members of the Board of Directors who are not Affiliates or

representatives of, or associated with, an Interested Person and who were either directors of the Corporation prior to any person becoming an Interested Person or were recommended for election or elected to succeed such directors by a vote which includes the affirmative vote of a majority of the Independent Directors.

6. The term "Institutional Investor" shall mean a person that (a) has acquired, or will acquire, all of its securities of the Corporation in the ordinary course of its business and not with the purpose nor with the effect of changing or influencing the control of the Corporation, nor in connection with or as a participant in any transaction having such purpose or effect, including any transaction subject to Rule 13d-3(b) under the Exchange Act, and (b) is a registered broker dealer; a bank as defined in Section 3(a)(6) of the Exchange Act; an insurance company as defined in, or an investment company registered under, the Investment Company Act of 1940; an investment advisor registered under the Investment Advisors Act of 1940; an employee benefit plan or pension fund subject to the Employee Retirement Income Security Act of 1974 or an endowment fund; a parent holding company, provided that the aggregate amount held directly by the parent and directly and indirectly by its subsidiaries which are not persons specified in the foregoing subclauses of this clause (b) does not exceed one percent (1%) of the securities of the subject class; or a group, provided that all the members are persons specified in the foregoing subclauses of this clause (b).

7. The term "Interested Person" shall mean any person (other than the Corporation, any subsidiary, any profit-sharing, employee stock ownership or other employee benefit plan of the Corporation or any subsidiary or any trustee of or fiduciary with respect to any such plan when acting in such capacity) who (a) is the beneficial owner of Voting Stock representing ten percent (10%) or more of the votes entitled to be cast by the holders of all then outstanding shares of Voting Stock; (b) has stated in a filing with any governmental agency or press release or otherwise publicly disclosed a plan or intention to become or consider becoming the beneficial owner of Voting Stock representing ten percent (10%) or more of the votes entitled to be cast by the holders of all then outstanding shares of Voting Stock and has not expressly abandoned such plan, intention or consideration more than two years prior to the date in question; or (c) is an Affiliate of the Corporation and at any time within the two-year period immediately prior to the date in question was the beneficial owner of Voting Stock

representing ten percent (10%) or more of the votes entitled to be cast by holders of all then outstanding shares of Voting Stock.

8. The term "person" shall mean any individual, corporation, partnership, unincorporated association, trust or other entity.

9. The term "subsidiary" means any company of which a majority of the voting securities are owned, directly or indirectly, by the Corporation.

10. The term "Voting Stock" shall mean Capital Stock of any class or series entitled to vote in the election of directors generally.

D. A majority of the Independent Directors shall have the power and duty to determine, on the basis of information known to them after reasonable inquiry, for the purposes of (1) this Article VII, all questions arising under this Article VII including, without limitation (a) whether a person is an Interested Person, (b) the number of shares of Capital Stock or other securities beneficially owned by any person; and (c) whether a person is an Affiliate of another; and (2) this Restated Certificate of Incorporation, the question of whether a person is an Interested Person. Any such determination made in good faith shall be binding and conclusive on all parties.

E. Nothing contained in this Article VII shall be construed to relieve any Interested Person from any fiduciary obligation imposed by law.

ARTICLE VIII

LIMITED LIABILITY; INDEMNIFICATION

A. Limited Liability. No person shall be personally liable to the Corporation or its stockholders for monetary damages for breach of fiduciary duty as a director, provided, however, that the foregoing shall not eliminate or limit the liability of a director (1) for any breach of the director's duty of loyalty to the Corporation or its stockholders, (2) for acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law, (3) under Section 174 of the General Corporation Law of the State of Delaware or (4) for any transaction from which the director derived an improper personal benefit. If the General

Corporation Law of the State of Delaware is amended hereafter to authorize corporate action further eliminating or limiting the personal liability of directors, then the liability of a director of the Corporation shall be eliminated or limited to the fullest extent permitted by the General Corporation Law of the State of Delaware, as so amended. Any amendment, repeal or modification of this Article VIII, Section A shall not adversely affect any right or protection of a director of the Corporation existing hereunder with respect to any act or omission occurring prior to such amendment, repeal or modification.

B. Indemnification. Each person who is or was a director or officer of the Corporation, and each such person who is or was serving at the request of the Corporation as a director or officer of another corporation, or of a partnership, joint venture, trust or other enterprise, including service with respect to employee benefit plans maintained or sponsored by the Corporation (including the heirs, executors, administrators and estate of such person) shall be indemnified and advanced expenses by the Corporation to the fullest extent permitted from time to time by the General Corporation Law of the State of Delaware or any other applicable laws as presently or hereafter in effect. The Corporation may, to the extent authorized in the By-laws of the Corporation or from time to time by the Board of Directors, grant rights to indemnification and to the advancement of expenses to any employee or agent of the Corporation to the fullest extent of the provisions of this Article with respect to the indemnification and advancement of expenses of directors and officers of the Corporation. Without limiting the generality or the effect of the foregoing, the Corporation may enter into one or more agreements with any person which provide for indemnification greater or different than that provided in this Article VIII, Section B. Any amendment, repeal or modification of this Article VIII, Section B shall not adversely affect any right or protection existing hereunder or pursuant hereto immediately prior to such amendment, repeal or modification.

ARTICLE IX

AMENDMENTS

The Corporation reserves the right to amend, alter, change or repeal any provision contained in this Restated Certificate of Incorporation, in the manner now or hereafter prescribed by statute, and all rights conferred upon stockholders herein are granted subject to this reservation; provided,

however, that notwithstanding any other provisions of this Restated Certificate of Incorporation or the By-laws of the Corporation (and notwithstanding the fact that a lesser percentage or separate class vote may be specified by law, this Restated Certificate of Incorporation or the By-laws of the Corporation), any proposal by or on behalf of an Interested Person or a director who is not an Independent Director to amend, alter, change or repeal any provision of paragraph 2 of Section A of Article V, Article VII, or Article VIII or to adopt any provision inconsistent with any of such provisions, shall require approval by the affirmative vote described in Section A of Article VII unless either (1) such action has been approved by a majority of the Board of Directors prior to such Interested Person first becoming an Interested Person or (2) prior to such Interested Person first becoming an Interested Person, a majority of the Board of Directors has approved such Interested Person becoming an Interested Person and, subsequently, a majority of the Independent Directors has approved such action.

Union Carbide Corporation

“Now, more than ever,
our customers know
they can count on
Carbide people
to deliver products,
services and
chemical expertise
that add up to
more value.”

1997 ANNUAL REPORT

Financial Highlights

Dollar amounts in millions (except per share figures)	1997	1996	% CHANGE
FOR THE YEAR			
NET SALES	\$ 6,502	\$ 6,106	6
OPERATING PROFIT	1,045	921	13
INCOME BEFORE CUMULATIVE EFFECT OF CHANGE IN ACCOUNTING PRINCIPLE	676	593	14
PER COMMON SHARE - BASIC	5.02	4.43	13
PER COMMON SHARE - DILUTED	4.53	3.90	16
CUMULATIVE EFFECT OF CHANGE IN ACCOUNTING PRINCIPLE	(17)	-	-
PER COMMON SHARE - BASIC	(0.13)	-	-
PER COMMON SHARE - DILUTED	(0.12)	-	-
NET INCOME - COMMON STOCKHOLDERS	652	583	12
PER COMMON SHARE - BASIC	4.89	4.43	10
PER COMMON SHARE - DILUTED	4.41	3.90	13
CASH DIVIDENDS ON COMMON STOCK	100	99	1
PER COMMON SHARE	0.7875	0.75	5
CAPITAL EXPENDITURES	755	721	5
AT YEAR-END			
TOTAL ASSETS	\$ 6,964	\$ 6,546	6
TOTAL DEBT	1,887	1,599	18
STOCKHOLDERS' EQUITY	2,348	2,114	11
PER COMMON SHARE	17.15	16.72	3
COMMON SHARES OUTSTANDING (THOUSANDS)	136,944	126,440	8
COMMON STOCKHOLDERS OF RECORD	47,713	51,023	(6)
EMPLOYEES	11,813	11,745	1

At a Glance

Union Carbide Corporation is a world-wide chemicals and polymers company. The company possesses many of the industry's most advanced process and catalyst technologies and some of the most cost efficient, large-scale production facilities in the world. In addition to its consolidated operations, the corporation participates in partnerships and joint ventures whose combined net sales totaled more than \$4.3 billion in 1997.

Union Carbide operates two business segments:

SPECIALTIES & INTERMEDIATES, which accounted for 68 percent of customer revenues and 64 percent of operating profit in 1997, produces a broad range of products, including specialty polyolefins used in wire and cable insulation; surfactants for

industrial cleaners; catalysts for the manufacture of polymers; acrolein and derivatives; water-soluble polymers; cellulose-, glucose- and lanolin-based materials for personal care products; specialty coatings; acrylic and vinyl acrylic latex used in paints and adhesives; solvents; vinyl acetate monomer, and ethylene oxide derivatives. This segment also licenses olefins-based technologies and offers other specialized technology licensing and services.

BASIC CHEMICALS & POLYMERS converts various hydrocarbon feedstocks, principally liquefied petroleum gases and naphtha, into the basic building-block chemicals ethylene and propylene (also known as olefins), which are in turn converted to polyethylene (the world's most widely used plastic), polypropylene

(one of the world's fastest-growing plastics), and ethylene oxide and ethylene glycol (used to make polyester fiber, film and resin, and automotive antifreeze). This segment provides ethylene, propylene, ethylene oxide and ethylene glycol to the Specialties & Intermediates segment.

Union Carbide's leading end markets as a percentage of sales are:

Packaging and consumer plastics	24
Paints, coatings and adhesives	21
Wire and cable	11
Textile	9
Household and personal care	6
Automotive, including antifreeze	5
Agriculture and food	4
Oil and gas	3
Industrial cleaners	3

Startup costs for our huge new petrochemical joint venture in Kuwait also reduced earnings, as did costs associated with the delayed startup of a new facility for producing ethylene/propylene rubber (EPR).

The Kuwait plant is in the final stage of startup at this writing, with both ethylene glycol and polyethylene already shipped to customers in Europe and Asia. And the EPR plant, which uses proprietary new technology to achieve vastly lower production costs, is scheduled for restarting in the fourth quarter of 1998, although further modification is required before that can happen.

On the plus side, the drain on 1997 earnings was partly offset by improved pricing for ethylene glycol, and for polyethylene early in the year, and by the continuing, substantial benefit derived from our work process improvement and cost reduction programs over the past several years.

To say that Carbide has few peers when it comes to improving work processes and reducing costs is only repeating what's often been said by others who follow our progress. Since 1992, total fixed costs have dropped by nearly \$8 million, notwithstanding a \$1.6 billion increase in revenues and a 27 percent increase in volume. Fixed cost per pound of product sold has dropped by 4.7 cents since the beginning of the decade, a 30 percent decrease. In 1997, costs associated with the Kuwait and EPR startups and other unusual growth expenses reduced earnings by \$0.72 per diluted share. Those expenses aside, the fixed cost improvements mean that, given margin conditions no better than the ones faced by BC&P in 1993, Carbide could have earned about three times as much per diluted share in 1997 as we earned in the 1993 trough.

Over the past seven years, we have learned that productivity improvement requires relentless focus on cost reduction throughout the entire enterprise. During this period,

virtually every unit within Carbide has established savings initiatives with specific, quantifiable targets. More often than not, as Carbiders have progressed with these efforts, new opportunities have been identified.

In 1990 we embarked on a \$200 million savings program. Less than three years into

CARBIDERS HAVE TIME AND AGAIN SHOWN THEMSELVES DEDICATED TO CREATING VALUE BY REDUCING COSTS.

that effort, it was clear that far more significant savings were possible, and a \$575 million target was established. That program, dubbed EQAI, was largely completed by the end of 1994, after we had achieved substantially all of the targeted savings. In 1995 we unveiled a new series of initiatives with targeted savings of \$637 million, compared to 1993, to be achieved by the year 2000. Last October, after having attained a substantial portion of these targets, we increased the savings goal to \$1.1 billion by the year 2000.

Carbiders have time and again shown themselves dedicated to creating value by reducing costs. I am confident that over the next three years they will extend the progress they've made since early in the decade. They have become as skilled as any workforce anywhere at finding ways to improve work processes and reduce costs while delivering the service that our customers expect.

On that score: We track customer evaluations of Carbide very closely, and it's clear that now, more than ever, our customers know they can count on Carbide people to deliver products, services and chemical expertise that add up to more value.

Carbiders take a great deal of pride in those evaluations and in our profit improvement work. And, not incidentally, they also benefit financially as shareholders and profit sharing participants when

our company does well. Beyond participation in the profit sharing program, most of our managers, including all senior managers, receive variable compensation based in large part upon our ability to realize returns on capital in excess of our competitors.

While there can be no assurances, if we are successful in achieving our savings targets, we believe that it will be possible also to earn at least \$4.00 per diluted share in both 1999 and 2000, the anticipated trough years of the current commodity chemical cycle.

To leave no doubt about management's own commitment to doing what it takes to reach these earnings levels, we have bet a large part of our pay on reaching them. If we fail in 2000, I will forfeit the equivalent of a year's salary, and 16 members of our senior management team each will forfeit the equivalent of 65 percent of a year's base pay. If we succeed, the plan, which investors have encouraged us to implement, has a substantial upside opportunity to go along with the risk.

In other words, Carbide management has real incentive to reach the target.

Although we are committed to our volume growth and savings targets, reaching them will not be easy or assured. But work is under way across our worldwide locations to improve operations, further streamline work processes and make the most of our strong market and technology positions. And much has already been accomplished.

To cite just a few examples: 1997 cost savings in our S&I segment of \$336 million, and savings of \$302 million for BC&P kept

Chemical Glossary

ALCOHOLS

Chemicals, such as butanol, ethanol and isopropanol, that serve as solvents and intermediates for the manufacture of personal care products, pharmaceuticals, esters, ketones, monomers for latexes, herbicides, petroleum additives and synthetic lubricants.

BIOCIDES

Chemicals used to control or inhibit the growth of bacteria, algae, fungi and mold.

CHEMICAL INTERMEDIATES

Chemicals formed or introduced as an intermediate step between the starting material and the final product in chemical processing. Examples include:

- **ACROLEIN**, used to make glutaraldehyde, animal feed supplements and coatings resins.
- **ESTERS**, such as ethyl acetate and butyl acrylate, made by reacting alcohols and acids and used primarily as paints and coatings solvents.
- **ETHANOLAMINES**, reaction products of ethylene oxide and ammonia, used in detergents and other cleaning materials, in personal care products and for removal of sulfur and other impurities from natural gases for consumer use.
- **ETHYLENEAMINES**, made from ethylene oxide or ethylene dichloride and used in a wide range of industrial products, including fuel, lubricant and motor oil additives, adhesives, wet-strength paper resins and paints.

ETHYLENE GLYCOL

Chemical made from ethylene oxide and water. It is used in the manufacture of polyester resins, film and fiber, automotive antifreeze and engine coolants and aircraft deicing/anti-icing fluids.

ETHYLENE OXIDE

Chemical made from ethylene and oxygen. It combines with other chemicals to produce a wide range of products, such as ethylene glycol, water-soluble polymers for personal care products and surfactants for detergents and cleaning products.

GLUTARALDEHYDE

An acrolein derivative predominantly used as a biocide for industrial water treatment and in oil field applications, animal housing sanitizers, surgical instrument sterilants and paper manufacturing.

GLYCOL ETHERS

Solvents used in higher-technology coating applications, such as waterborne industrial finishes for the automotive market, and noncoating applications, such as in hard surface cleaners, military jet fuels and brake fluids.

KETONES

Chemicals, such as acetone, used as solvents for vinyl resins, industrial lacquers and pharmaceuticals, and as an intermediate for resins, dyes and rubber chemicals.

MONOMER

Reactive chemical that can be converted into a polymer. For example, ethylene is a monomer that is made into polyethylene.

OLEFINS

Generic name for ethylene, propylene and other unsaturated hydrocarbons (carbon atoms joined by double bonds) made from components of petroleum or natural gas.

Examples include:

- **ETHYLENE AND PROPYLENE**, chemicals derived from natural gases or petroleum components, and the starting materials from which most of Union Carbide's chemicals and polymers are made.

OXO ALCOHOLS, ALDEHYDES AND ACIDS

Chemicals Carbide manufactures via its LP OXO Process, such as butanol and propionic acid, which are used as chemical intermediates and industrial solvents.

POLYMERS

Chains or networks of linked monomers. All plastics are polymers. Examples include:

- **POLYETHYLENE**, the world's most widely used plastic, made by the reaction of ethylene and other olefins. It is used in hundreds of consumer and industrial products, including grocery and trash bags, waste containers, housewares, bottles, drums, food packaging and wire and cable insulation and jacketing. Union Carbide produces most of its polyethylene via UNIPOL Process technology developed by the company in the early 1970's, which is licensed to polyethylene makers around the world.
- **POLYPROPYLENE**, a fast-growing, high-volume plastic made from the reaction of propylene and other olefins. The broad range of applications includes lawn furniture, carpet fiber and backing, food containers, toys, appliance housings and binding materials. Much of Union Carbide's production is via the UNIPOL PP Process, also licensed around the world.

SOLVENTS

Chemicals used to dissolve or absorb other chemicals. For example, ketones, esters, alcohols and glycol ethers are effective solvents commonly used in paints and coatings.

SURFACTANTS

Chemicals that increase the cleaning and wetting properties of household and industrial cleaners and detergents. They are used also in textile and paper processing, paints and agricultural products. Surfactants also are used in cosmetics, shampoos and other personal care products. Carbide makes its surfactants primarily from ethylene oxide and alcohols.

BASIC CHEMICALS & POLYMERS SEGMENT

with a wide range of applications in pharmaceutical, personal care, household and industrial markets; ethanalamines, for detergents, personal care products and natural gas conditioning and refining; ethyleneamines, for many industrial uses; TERGITOL and TRITON specialty and commodity surfactants, for institutional and household cleaning products and other industrial applications; UCON fluids and lubricants, and alkyl alkanolamines for water-treating chemicals. Formulated glycol products include UCAR and UCAR ULTRA+ deicing and anti-icing fluids for the aviation industry; UCARTHERM and NORKOOL heat-transfer fluids, and gas-treating products, including UCARSOL and SELEXOL solvents.

SOLVENTS, INTERMEDIATES AND MONOMERS (SIM) supplies one of the industry's broadest product lines of solvents, intermediates and monomers. Its products include aldehydes, acids and alcohols, including high-quality industrial-grade synthetic and fermentation ethanol; esters; glycol ethers (brake fluids and CARBITOL and CELLOSOLVE solvents); ketones, and monomers (vinyl acetate and acrylics for waterborne coatings). Its principal customers are the paints and coatings industries. Many of SIM's products are also used widely in cosmetics and personal care preparations, adhesives, household and institutional products, drugs and pharmaceuticals; as fuel and lube oil additives, and in agricultural products. The UNICARB System is a pollution-reducing, supercritical fluid technology that can cut costs and reduce volatile organic compounds (VOCs) in spray-applied coatings by up to 80 percent.

Union Carbide's **HYDROCARBONS** group manufactures about two thirds of the company's ethylene requirements and almost one third of its propylene requirements. Ethylene and propylene are the key raw materials for many of Union Carbide's businesses.

Union Carbide is the world's leading producer of ethylene oxide and ethylene glycol, supplied by the **ETHYLENE OXIDE/GLYCOL** group. Ethylene oxide is a chemical intermediate primarily used in the manufacture of ethylene glycol, polyethylene glycol, glycol ethers, ethanalamines, surfactants and other performance chemicals and polymers. Ethylene glycol is used extensively in the production of polyester fiber, resin and film, automotive antifreeze and engine coolants, and aircraft anti-icing and deicing fluids. Other ethylene oxide-based glycol products include di-, tri-, and tetraethylene glycols, used as chemical intermediates and in dehydrating natural gas.

Union Carbide is a leading manufacturer of polyethylene, the world's most widely used plastic. **UNIPOL POLYMERS** produces and markets linear low-, medium- and high-density polyethylenes, used in high-volume applications such as housewares, milk and water bottles, grocery sacks, trash bags, packaging, water and gas pipe, and FLEXOMER very low-density resins, used as a polymer modifier in other polyolefins and to produce flexible hose and tubing, frozen-food bags and stretch wrap.

Carbide's **POLYPROPYLENE RESINS** operations manufacture and sell polypropylene, one of the world's largest-volume, fastest-growing plastics. End-use applications include carpeting and upholstery, apparel, packaging films, food containers, housewares and appliances, and automobile interior trim and panels.

For a summary of business and geographic segment data, see NOTE FIVE to the financial statements.

Torrance, Calif.
Tucker, Ga.
Alsip, Ill.
Greensburg, La.
Norco, La.
Taft, La.
Bound Brook, N.J.
Edison, N.J.
Somerset, N.J.
Bayamón, P.R.
Garland, Tex.
Seadrift, Tex.
Texas City, Tex.
Washougal, Wash.
Instincture, W.Va.
South Charleston, W.Va.
Prentiss, Alberta
Vilvoorde, Belgium
Zwijndrecht, Belgium
Wilton, U.K.
Aram, Brazil
Cabo, Brazil
Cubatão, Brazil
Guayaquil, Ecuador
Guangdong, China
Shanghai, China
Jakarta, Indonesia
Seremban, Malaysia
Batangas, Philippines
Colombo, Sri Lanka
Nonthaburi, Thailand
Dubai, United Arab Emirates

Management's Discussion & Analysis

RESULTS OF OPERATIONS

Millions of dollars (except per share figures) for the year ended December 31.

	1997	1996	1995
NET SALES	\$ 6,502	\$6,106	\$5,888
OPERATING PROFIT ^(a)	1,045	921	1,348
INTEREST EXPENSE	79	76	89
INCOME BEFORE PROVISION FOR INCOME TAXES	966	845	1,259
INCOME BEFORE CUMULATIVE EFFECT OF CHANGE IN ACCOUNTING PRINCIPLE	676	593	925
NET INCOME	659	593	925
NET INCOME – COMMON STOCKHOLDERS	652	583	915
PER SHARE – BASIC –			
INCOME BEFORE CUMULATIVE EFFECT OF CHANGE IN ACCOUNTING PRINCIPLE	\$ 5.02	\$ 4.43	\$ 6.65
NET INCOME – COMMON STOCKHOLDERS	4.89	4.43	6.65
PER SHARE – DILUTED –			
INCOME BEFORE CUMULATIVE EFFECT OF CHANGE IN ACCOUNTING PRINCIPLE	4.53	3.90	5.85
NET INCOME – COMMON STOCKHOLDERS	4.41	3.90	5.85

a) See NOTE FIVE to the financial statements for a discussion of the special items included in operating profit.

SUMMARY AND OUTLOOK

Union Carbide operates two business segments. Specialties & Intermediates converts basic and intermediate chemicals into a diverse portfolio of chemicals and polymers serving industrial customers in many markets. This segment also provides technology services, including licensing, to the oil and petrochemicals industries. Basic Chemicals & Polymers converts hydrocarbon feedstocks, principally liquefied petroleum gas and naphtha, into ethylene or propylene and then into polyethylene, polypropylene, ethylene oxide and ethylene glycol for sale to third-party customers, as well as ethylene, propylene, ethylene oxide and ethylene glycol for consumption by the Specialties & Intermediates segment. In contrast to those of Specialties & Intermediates, the revenues and operating profit of Basic Chemicals & Polymers tend to be more cyclical and very sensitive to a number of external variables, including overall economic demand, hydrocarbon feedstock costs, industry capacity increases and plant operating rates.

Segment results were mixed in 1997 with Basic Chemicals & Polymers reporting substantially improved operating profit as compared with 1996 while Specialties & Intermediates operating profit decreased 10.1 percent. The Basic Chemicals & Polymers business benefited from increased ethylene glycol prices throughout the first three quarters of 1997 and improved polyethylene pricing through the first half of the year. In addition, the segment experienced reduced average feedstock costs versus 1996. Specialties & Intermediates operating profit was adversely impacted by increased raw material costs, most significantly ethylene oxide transferred from the Basic Chemicals & Polymers segment at approximate market value, higher energy costs and shipment disruptions associated with railroad problems in the U.S. Gulf Coast region. Average selling prices for the Specialties & Intermediates segment were negatively impacted by a much stronger U.S. dollar as well as by increased competition, principally in the segment's solvents, intermediates and monomers product lines. On a consolidated basis, sales volumes increased by 5.1 percent, while fixed cost per pound

sold declined to 10.8 cents, the lowest of this decade. Partnership income remained strong, excluding certain costs, principally research and development, assumed by our new technology venture, Univation Technologies, LLC. Additionally, the improved earnings from our equity companies represented increases in earnings of Polimeri Europa partially offset by increased preoperating expenses associated with EQUATE Petrochemical Company.

In 1996 the corporation's earnings were adversely impacted by declines in selling prices, particularly for ethylene glycol, polyethylene and vinyl acetate monomer, and by high raw material and energy costs. These factors significantly impacted Basic Chemicals & Polymers operating profit and limited Specialties & Intermediates operating profit growth. Sales volumes experienced their largest increase in the past decade, while productivity, as measured by fixed cost per pound of product sold, also improved. Partnerships continued to report strong profits, while equity company results declined due to the preoperating costs of EQUATE and increased raw material costs for Polimeri Europa.

The corporation regularly reviews its assets with the objective of maximizing the deployment of resources in core operations. In this regard, UCC continues to consider strategies and/or transactions with respect to certain noncore assets and other assets not essential to the operation of the business that, if implemented, could result in material nonrecurring gains or losses.

QUANTITATIVE AND QUALITATIVE DISCLOSURES

ABOUT MARKET RISK

The corporation selectively uses derivative financial instruments to manage its exposure to market risk related to changes in foreign currency exchange rates and interest rates. The corporation does not hold derivatives for trading purposes. The value of market sensitive derivative instruments is subject to change as a result of movements in market rates and prices. Sensitivity analysis is one technique used to evaluate these impacts. Based on a hypothetical 10 percent weakening in the U.S. dollar across all currencies or a 10 percent increase in interest rates, the potential losses in future earnings, fair values and cash flows would not be material. This methodology has limitations; for example, a weakening U.S. dollar would benefit future earnings through favorable translation of non-U.S. operating results.

FOREIGN OPERATIONS

A portion of the financial results of each of the corporation's segments is derived from activities conducted outside the U.S. and denominated in currencies other than the U.S. dollar. Because the financial results of the corporation are reported in U.S. dollars, they are affected by changes in the value of the various foreign currencies in relation to the U.S. dollar. Exchange rate risks are lessened, however, by the diversity of the corporation's foreign operations and the fact that international activities are not concentrated in any single non-U.S. currency. In addition, the effects of a strengthening U.S. dollar could cause pricing pressures on worldwide chemical markets which could result in declines in the corporation's sales volumes.

The corporation is subject to other risks customarily associated with doing business in foreign countries, including local labor and economic conditions, unfavorable changes in foreign tax laws, and possible controls on repatriation of earnings and capital. Future losses associated with such risks, if any, cannot be predicted.

SPECIALTIES & INTERMEDIATES

Millions of dollars	1997	1996	1995
SALES	\$4,453	\$4,286	\$4,123
DEPRECIATION AND AMORTIZATION	214	188	194
OPERATING PROFIT	667	742	709
CAPITAL EXPENDITURES	458	522	392
IDENTIFIABLE ASSETS	4,146	3,892	3,527

1997 Compared with 1996

Sales of the Specialties & Intermediates segment increased 3.9 percent, as a result of a 6.7 percent increase in volume offset by lower average selling prices. Average selling price reductions were due in part to a strengthening of the U.S. dollar against currencies such as the German Deutschmark and Japanese Yen, as well as by increased competition in solvents, intermediates and monomers product lines. Additionally, shipments for this segment's products were affected by rail problems in the U.S. Gulf Coast region. Variable margin (revenues less variable manufacturing and distribution costs) as a percentage of sales declined 2.2 percentage points, from 44.6 percent in 1996 to 42.4 percent in 1997, while gross margin (variable margin less fixed manufacturing and distribution costs) as a percentage of sales declined 2.4 percentage points to 24.6 percent in 1997. Increases in the market-related transfer cost of raw materials produced by the Basic Chemicals & Polymers segment, as well as the increasing cost of natural gas, significantly affected these margins. Fixed manufacturing and distribution costs for this segment increased 5.3 percent, or \$40 million, from the previous year's levels.

Selling, administration and other expenses (SA&O) for this segment decreased \$5 million, or 2.0 percent. Research and development expenditures decreased \$2 million, to \$126 million, mainly attributable to costs assumed by the corporation's new technology venture, Univation Technologies.

Operating profit decreased \$75 million, or 10.1 percent, to \$667 million from \$742 million in 1996. The current year operating profit includes a charge of \$12 million for the write-off of certain equipment associated with the corporation's ethylene propylene rubber project.

1996 Compared with 1995

Revenues of the Specialties & Intermediates segment increased 4.0 percent, the result of an 8.9 percent increase in volume partially offset by a 4.7 percent decline in average selling prices. The reduction in average selling prices reflected the combined effect of increases in

environmental protection, including those for new capacity and cost reduction and replacement, in 1997 totaled \$68 million, compared with \$43 million and \$49 million in 1996 and 1995, respectively.

The corporation, like other companies in the U.S., periodically receives notices from the U.S. Environmental Protection Agency and from state environmental agencies, as well as claims from other companies, alleging that the corporation is a potentially responsible party (PRP) under the Comprehensive Environmental Response, Compensation and Liability Act and equivalent state laws (hereafter referred to collectively as Superfund) for past and future cleanup costs at hazardous waste sites at which the corporation is alleged to have disposed of, or arranged for treatment or disposal of, hazardous substances. The corporation is also undertaking environmental investigation and remediation projects at hazardous waste sites located on property currently and formerly owned by the corporation pursuant to Superfund, as well as to the Resource Conservation and Recovery Act and equivalent state laws.

There are approximately 117 hazardous waste sites at which management believes it is probable or reasonably possible that the corporation will incur liability for investigation and/or remediation costs. The corporation has established accruals for those hazardous waste sites where it is probable that a loss has been incurred and the amount of the loss can reasonably be estimated. The reliability and precision of the loss estimates are affected by numerous factors, such as the stage of site evaluation, the allocation of responsibility among PRPs and the assertion of additional claims. The corporation adjusts its accruals as new remediation requirements are defined, as information becomes available permitting reasonable estimates to be made, and to reflect new and changing facts.

At Dec. 31, 1997, the corporation's accruals for environmental remediation totaled \$264 million (\$310 million in 1996). Approximately 55 percent of the accrual (58 percent in 1996) pertains to estimated future expenditures for site investigation and cleanup, and approximately 45 percent (42 percent in 1996) pertains to estimated expenditures for closure and postclosure activities. See NOTE SEVENTEEN to the financial statements for a discussion of the environmental sites for which the corporation has remediation responsibility. In addition, the corporation had environmental loss contingencies of \$159 million at Dec. 31, 1997.

Estimates of future costs of environmental protection are necessarily imprecise, due to numerous uncertainties. These include the impact of new laws and regulations, the availability and application of new and diverse technologies, the identification of new hazardous waste sites at which the corporation may be a PRP and, in the case of Superfund sites, the ultimate allocation of costs among PRPs and

the final determination of the remedial requirements. While estimating such future costs is inherently imprecise, taking into consideration the corporation's experience to date regarding environmental matters of a similar nature and facts currently known, the corporation estimates that worldwide expenses related to environmental protection, expressed in 1997 dollars, should average about \$110 million annually over the next five years. Worldwide capital expenditures for environmental protection, also expressed in 1997 dollars, are expected to average about \$50 million annually over the same period. Management anticipates that future annual costs for environmental protection after 2002 will continue at levels comparable to the five-year average estimates.

Subject to the inherent imprecision and uncertainties in estimating and predicting future costs of environmental protection, it is management's opinion that any future annual costs for environmental protection in excess of the five-year average estimates stated here, plus those costs anticipated to continue thereafter, would not have a material adverse effect on the corporation's consolidated financial position.

LITIGATION

The corporation and its consolidated subsidiaries are involved in a number of legal proceedings and claims with both private and governmental parties. These cover a wide range of matters, including, but not limited to, product liability; governmental regulatory proceedings; health, safety and environmental matters; employment; patents; contracts, and taxes. In addition, the corporation continues to be named as one of a number of defendants in lawsuits involving silicone breast implants. The corporation supplied bulk silicone materials to certain companies that at various times were involved in the manufacture of breast implants. These cases are discussed in more detail in NOTE SEVENTEEN to the financial statements. In some of these legal proceedings and claims, the cost of remedies that may be sought or damages claimed is substantial. While it is impossible at this time to determine with certainty the ultimate outcome of any such legal proceedings and claims, management believes that adequate provisions have been made for probable losses with respect thereto and that such ultimate outcome, after provisions therefor, will not have a material adverse effect on the consolidated financial position of the corporation but could have a material effect on consolidated results of operations in a given quarter or year. Should any losses be sustained in connection with any of such legal proceedings and claims in excess of provisions therefor, they will be charged to income in the future.

Specialties & Intermediates

The corporation's share of the net income of Specialties & Intermediates partnerships and joint ventures decreased \$21 million in 1997. This decline resulted from the assumption of certain costs, principally research and development, by the corporation's new technology venture, Univation Technologies, and decreased earnings of World Ethanol, mainly attributable to lower prices and volumes caused by a different mix of ethanol sales in 1997.

Increased earnings in 1996, as compared with 1995, resulted from increased earnings from UOP being partially offset by the elimination of earnings of the polypropylene partnership with Shell Oil Company. The 1996 and 1997 earnings from the polypropylene business were included in the consolidated results.

Basic Chemicals & Polymers

The corporation's share of the net income of Basic Chemicals & Polymers partnerships and joint ventures increased \$29 million from 1996 to 1997, due to significant improvement in Polimeri Europa and Petromont earnings, offset by increased preoperating expenses of EQUATE. Strong results of our polyolefins partnerships in 1997 were the result of increases in worldwide polymer pricing over the prior year. The decrease from 1995 to 1996 reflected losses from Polimeri Europa and decreased earnings from Petromont, caused by lower polyethylene prices and higher raw material costs, and the recognition of preoperating expenses of EQUATE.

EQUATE Petrochemical Company commenced operations in the fourth quarter of 1997. Losses of \$43 million for development of this world-scale petrochemical complex were recognized by the corporation in 1997 (\$23 million and \$3 million in 1996 and 1995, respectively). The corporation has severally guaranteed 45 percent (approximately \$606 million at Dec. 31, 1997) of EQUATE's debt and working capital financing needs until certain completion and financial tests are achieved. If these tests are met, a \$54 million several guarantee will provide ongoing support thereafter. The corporation also severally guaranteed certain sales volume targets until EQUATE's sales capabilities are proved. In addition, the corporation has pledged its shares in EQUATE as security for EQUATE's debt. The corporation has political risk insurance coverage for its equity investment and, through Sept. 30, 1998, substantially all of its several guarantee of EQUATE's debt.

Other

The corporation's remaining interest in UCAR International Inc., a manufacturer of carbon and graphite products, was sold in 1995.

Income (loss) from corporate investments carried at equity included

\$4 million in 1995, representing the corporation's share of UCAR's earnings in that year. Additionally, the corporation's share of dividends and distributions from UCAR was \$5 million in 1995.

INTEREST EXPENSE

Interest expense increased \$3 million, from \$76 million in 1996 to \$79 million in 1997. This increase reflects the effect of a full year's interest expense associated with the 7.75 percent debentures due in 2096 and an increase in short-term debt, partially offset by an increase in capitalized interest associated with the corporation's capital program. Interest expense decreased \$13 million from 1995 to 1996 as a result of increased capitalized interest.

PROVISION FOR INCOME TAXES

The effective tax rate was 28.9 percent in 1997 compared with 27.9 percent and 30.2 percent in 1996 and 1995, respectively. The corporation's effective tax rate was reduced in each of these years as a result of foreign sales corporation income taxed at a preferential rate and research and experimentation tax credits. The 1995 effective tax rate was increased as a result of taxes provided on the sale of UCAR International Inc.

ACCOUNTING CHANGES

1995 through 1997

In November 1997, the Emerging Issues Task Force reached consensus on Issue 97-13, "Accounting for Costs Incurred in Connection with a Consulting Contract or an Internal Project That Combines Business Process Reengineering and Information Technology Transformation," requiring companies to expense as incurred costs associated with business process reengineering activities. Effective Oct. 1, 1997, the corporation adopted the provisions of Issue 97-13 as a cumulative effect of a change in accounting principle, reversing \$28 million (\$17 million, after-tax) of costs previously capitalized from 1995 through the third quarter of 1997.

Additionally in 1997, the corporation adopted Statement of Financial Accounting Standards (SFAS) 128, "Earnings Per Share", and SFAS 129, "Disclosure of Information About Capital Structure." In 1996, the corporation adopted SFAS 123, "Accounting for Stock-Based Compensation," under which the corporation elected to continue following Accounting Principles Board Opinion 25. In 1995, the corporation adopted SFAS 121, "Accounting for the Impairment of Long-Lived Assets and for Long-Lived Assets to Be Disposed Of," the effect of which was not material.

At Dec. 31, 1997, the cost of completing authorized construction projects was estimated to be \$1.375 billion, of which \$50 million is covered by firm commitments. Future construction expenditures are anticipated to be sourced through operating cash flows and borrowings.

CASH FLOW USED FOR FINANCING

Cash flow used for financing includes stockholder and minority interest dividends and funds used to buy back common stock, offset in part by net proceeds from short- and long-term debt and sales of common stock pursuant to the corporation's dividend reinvestment plan and its employee savings and investment programs.

Cash flow used for financing in 1997 totaled \$132 million, compared with \$254 million in 1996 and \$57 million in 1995. Net borrowings totaled \$306 million, while cash dividends totaled \$134 million.

In January 1997, a newly formed real estate investment trust (REIT)-subsidiary issued \$250 million of preferred stock bearing a current dividend yield of 14 percent for 10 years and 1 percent thereafter. In October 1997, the corporation paid \$240 million in cash to redeem the preferred stock shares. Cash dividends paid to preferred shareholders of the REIT during 1997 totaled \$25 million.

In September 1997, the board of directors declared an increase in the quarterly common stock dividend to \$0.225 per share. In October 1997, the trustee of the Employee Stock Ownership Plan (ESOP) exercised its right to convert all shares of the corporation's preferred stock held by the ESOP into the corporation's common stock. This noncash conversion increased the corporation's common stock outstanding at that time by 15.4 million shares.

In 1996, the corporation issued \$200 million of 7.75 percent debentures maturing in 2096, the proceeds of which were used to finance ongoing share repurchases and to pay down existing short-term debt. In 1995 the corporation completed a \$400 million, two-part public offering of debt securities.

On July 23, 1997, the corporation's board of directors authorized an increase in the number of shares that may be repurchased under the existing common stock repurchase program by 10 million shares, to an aggregate of 60 million shares since inception of the program. During 1997, pursuant to the share repurchase program, the corporation repurchased 7.0 million shares of its common stock for \$337 million, at an average effective price of \$47.62 per share, bringing the total amount repurchased since the beginning of 1993 to 49.3 million shares for \$1.713 billion, at an average effective price of \$34.69 per share. The corporation intends to acquire

additional shares from time to time at prevailing market prices, at a rate consistent with the combination of corporate cash flow and market conditions.

At Dec. 31, 1997, there were no outstanding borrowings under either the corporation's existing \$1 billion bank credit agreement or its \$500 million medium-term note program.

DEBT RATIOS

Total debt outstanding at year-end for the past three years was:

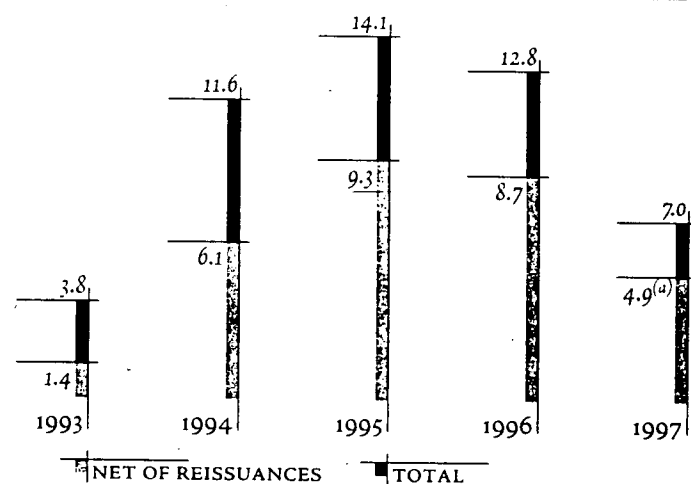
Millions of dollars	1997	1996	1995
DOMESTIC	\$1,719	\$1,492	\$1,254
INTERNATIONAL	168	107	69
TOTAL	\$1,887	\$1,599	\$1,323

Year-end ratios of total debt to total capital were:

	1997	1996	1995
DEBT RATIO	44.2%	42.7%	39.0%

Total debt consists of short-term debt, long-term debt and the current portion of long-term debt. Total capital consists of total debt plus minority stockholders' equity in consolidated subsidiaries and stockholders' equity.

SHARES REPURCHASED - MILLIONS



(a) Does not include 15.4 million shares issued in connection with the ESOP preferred share conversion.

1994	1993	1992	1991	1990	1989	1988
\$ 4,865	\$ 4,640	\$ 4,872	\$ 4,877	\$ 5,238	\$ 5,613	\$ 5,525
3,673	3,589	3,764	3,787	3,876	3,909	3,696
136	139	155	157	157	143	124
290	340	383	408	466	442	394
274	276	293	287	278	261	255
98	67	60	(22)	70	82	95
(39)	(66)	(13)	(135)	103	108	(1)
551	297	324	81	634	1,048	1,150
80	70	146	228	269	268	172
471	227	178	(147)	365	780	978
137	78	45	(50)	130	257	381
55	16	(14)	(21)	(42)	27	33
389	165	119	(116)	188	530	608
-	(97)	(361)	-	-	-	-
379	58	(187)	(28)	308	573	662
\$ 2.51	\$ 1.03	\$ 0.79	\$ (1.07)	\$ 1.34	\$ 3.79	\$ 4.52
2.51	0.37	(1.48)	(0.22)	2.19	4.10	4.92
2.27	0.97	0.76	(1.07)	1.32	3.63	4.30
2.27	0.41	(1.24)	(0.22)	2.16	3.92	4.67
\$ 329	\$ 233	\$ 66	\$ 209	\$ 7	\$ 22	\$ 14
5,028	4,689	4,941	6,826	7,389	7,355	7,327
899	931	1,113	1,160	2,058	2,060	2,271
537	378	277	428	357	572	594
2,479	2,395	2,710	4,694	5,338	5,319	4,805
1,509	1,428	1,238	2,239	2,373	2,383	1,836
10.45	9.49	9.32	17.55	18.88	16.83	13.34
\$ 113	\$ 110	\$ 114	\$ 126	\$ 138	\$ 140	\$ 155
0.75	0.75	0.875	1.00	1.00	1.00	1.15
-	-	15.875	-	-	-	-
35.88	23.13	17.13(d)	22.63	24.88	33.25	28.38
21.50	16.00	10.88(d)	15.13	14.13	22.75	17.00
144,412	150,548	132,865	127,607	125,674	141,578	137,602
409	395	359	400	381	483	380
12,004	13,051	15,075	16,705	17,722	18,032	17,258
38.2%	40.3%	54.3%	52.0%	54.0%	49.9%	56.1%
18.0%	7.7%	6.9%	-	8.4%	21.2%	24.5%
26.5%	4.7%	(8.4)%	(1.2)%	12.9%	31.2%	53.1%
26.5%	12.4%	6.8%	-	7.9%	25.1%	39.4%
29.0%	66.7%	95.8%	-	73.4%	26.4%	25.5%

Consolidated Balance Sheet

Union Carbide Corporation and Subsidiaries

Millions of dollars at December 31,

	1997	1996
ASSETS		
CASH AND CASH EQUIVALENTS	\$ 68	\$ 94
NOTES AND ACCOUNTS RECEIVABLE	993	1,047
INVENTORIES	604	541
OTHER CURRENT ASSETS	201	191
TOTAL CURRENT ASSETS	1,866	1,873
PROPERTY, PLANT AND EQUIPMENT	7,707	7,159
LESS: ACCUMULATED DEPRECIATION	3,927	3,750
NET FIXED ASSETS	3,780	3,409
COMPANIES CARRIED AT EQUITY	690	695
OTHER INVESTMENTS AND ADVANCES	73	77
TOTAL INVESTMENTS AND ADVANCES	763	772
OTHER ASSETS	555	492
TOTAL ASSETS	\$6,964	\$6,546
LIABILITIES AND STOCKHOLDERS' EQUITY		
ACCOUNTS PAYABLE	\$ 273	\$ 268
SHORT-TERM DEBT AND CURRENT PORTION OF LONG-TERM DEBT	429	112
ACCRUED INCOME AND OTHER TAXES	75	133
OTHER ACCRUED LIABILITIES	727	765
TOTAL CURRENT LIABILITIES	1,504	1,278
LONG-TERM DEBT	1,458	1,487
POSTRETIREMENT BENEFIT OBLIGATION	464	473
OTHER LONG-TERM OBLIGATIONS	738	811
DEFERRED CREDITS	419	301
MINORITY STOCKHOLDERS' EQUITY IN CONSOLIDATED SUBSIDIARIES	33	29
CONVERTIBLE PREFERRED STOCK - ESOP	-	144
UNEARNED EMPLOYEE COMPENSATION - ESOP	-	(91)
STOCKHOLDERS' EQUITY		
COMMON STOCK		
AUTHORIZED - 500,000,000 SHARES		
ISSUED - 154,609,669 SHARES	155	155
ADDITIONAL PAID-IN CAPITAL	47	370
TRANSLATION AND OTHER EQUITY ADJUSTMENTS	(104)	(33)
RETAINED EARNINGS	3,074	2,629
UNEARNED EMPLOYEE COMPENSATION - ESOP	(80)	-
LESS: TREASURY STOCK, AT COST - 17,666,164 SHARES (28,169,324 IN 1996)	744	1,007
TOTAL STOCKHOLDERS' EQUITY	2,348	2,114
TOTAL LIABILITIES AND STOCKHOLDERS' EQUITY	\$6,964	\$6,546

The Notes to Financial Statements on pages 25 through 40 should be read in conjunction with this statement.

Consolidated Statement of Cash Flows

Union Carbide Corporation and Subsidiaries

Increase (decrease) in cash and cash equivalents
Millions of dollars, year ended December 31,

	1997	1996	1995
OPERATIONS			
INCOME BEFORE CUMULATIVE EFFECT OF CHANGE IN ACCOUNTING PRINCIPLE	\$ 676	\$ 593	\$ 925
NONCASH CHARGES (CREDITS) TO NET INCOME			
DEPRECIATION AND AMORTIZATION	340	312	306
DEFERRED INCOME TAXES	86	82	(29)
NET GAINS ON INVESTING TRANSACTIONS	-	(3)	(379)
OTHER	6	16	186
INCREASE IN WORKING CAPITAL ^(a)	(144)	(92)	(242)
LONG-TERM ASSETS AND LIABILITIES	(47)	(46)	(4)
CASH FLOW FROM OPERATIONS	917	862	763
INVESTING			
CAPITAL EXPENDITURES	(755)	(721)	(542)
INVESTMENTS, ADVANCES AND ACQUISITIONS (EXCLUDING CASH ACQUIRED)	(68)	(263)	(431)
SALE OF INVESTMENTS	-	-	552
SALE OF FIXED AND OTHER ASSETS	13	22	54
CASH FLOW USED FOR INVESTING	(810)	(962)	(367)
FINANCING			
CHANGE IN SHORT-TERM DEBT (3 MONTHS OR LESS)	271	96	(11)
PROCEEDS FROM SHORT-TERM DEBT	51	21	6
REPAYMENT OF SHORT-TERM DEBT	-	(37)	-
PROCEEDS FROM LONG-TERM DEBT	14	203	402
REPAYMENT OF LONG-TERM DEBT	(30)	(10)	(22)
ISSUANCE OF COMMON STOCK	44	129	116
PURCHASE OF COMMON STOCK	(337)	(544)	(425)
PROCEEDS FROM SUBSIDIARY PREFERRED STOCK	250	-	-
PURCHASE OF SUBSIDIARY PREFERRED STOCK	(240)	-	-
PAYMENT OF DIVIDENDS	(134)	(111)	(116)
OTHER	(21)	(1)	(7)
CASH FLOW USED FOR FINANCING	(132)	(254)	(57)
EFFECT OF EXCHANGE RATE CHANGES ON CASH AND CASH EQUIVALENTS	(1)	(1)	1
CHANGE IN CASH AND CASH EQUIVALENTS	(26)	(355)	340
CASH AND CASH EQUIVALENTS BEGINNING-OF-YEAR	94	449	109
CASH AND CASH EQUIVALENTS END-OF-YEAR	\$ 68	\$ 94	\$ 449
CASH PAID FOR INTEREST AND INCOME TAXES			
INTEREST (NET OF AMOUNT CAPITALIZED)	\$ 77	\$ 66	\$ 68
INCOME TAXES	121	169	329
a) Net change in certain components of working capital (excluding noncash transactions):			
(Increase) decrease in current assets			
Notes and accounts receivable	\$ 53	\$ (26)	\$ (111)
Inventories	(63)	43	(144)
Other current assets	-	25	8
Increase (decrease) in payables and accruals	(134)	(134)	5
(Increase) in working capital	\$(144)	\$ (92)	\$(242)

The Notes to Financial Statements on pages 25 through 40 should be read in conjunction with this statement.

Notes to Financial Statements

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NOTE

SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Nature of Operations ■ Union Carbide Corporation is engaged in two segments of the chemicals and plastics industry, Specialties & Intermediates and Basic Chemicals & Polymers. See NOTE FIVE.

Principles of Consolidation ■ The consolidated financial statements include the accounts of all significant subsidiaries. All significant intercompany transactions have been eliminated in consolidation. Investments in 20 percent- to 50 percent-owned companies and partnerships are carried at equity in net assets. Other investments are carried generally at cost.

The consolidated financial statements have been prepared in conformity with generally accepted accounting principles, which require the corporation to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and

liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

Accounting Changes ■ In November 1997, the Emerging Issues Task Force reached consensus on Issue 97-13, "Accounting for Costs Incurred in Connection with a Consulting Contract or an Internal Project That Combines Business Process Reengineering and Information Technology Transformation," requiring companies to expense as incurred costs associated with business process reengineering activities. Effective Oct. 1, 1997, the corporation adopted the provisions of Issue 97-13 as a cumulative effect of a change in accounting principle, reversing \$28 million (\$17 million, after tax) of costs previously capitalized from 1995 through the third quarter of 1997.

Additionally in 1997, the corporation adopted Statement of Financial Accounting Standards (SFAS) 128,

"Earnings Per Share," and SFAS 129, "Disclosure of Information About Capital Structure." In 1996, the corporation adopted SFAS 123, "Accounting for Stock-Based Compensation," under which the corporation elected to continue following Accounting Principles Board (APB) Opinion 25. In 1995, the corporation adopted SFAS 121, "Accounting for the Impairment of Long-Lived Assets and for Long-Lived Assets to Be Disposed Of," the effect of which was not material.

Foreign Currency Translation ■ Unrealized gains and losses resulting from translating foreign subsidiaries' assets and liabilities into U.S. dollars generally are accumulated in an equity account on the balance sheet until such time as the subsidiary is sold or substantially or completely liquidated. Translation gains and losses relating to operations located in Latin American countries, where hyperinflation exists, and to international operations using the U.S. dollar as their functional currency are included in the income statement.

have any foreign currency forward contracts outstanding at Dec. 31, 1997 (\$38 million at Dec. 31, 1996) to hedge fluctuations in the dollar value of short-term foreign currency receivables and payables.

Outstanding foreign currency forward contracts and options used as a means of offsetting fluctuations in the dollar value of other foreign currency accounts receivable and payable and earnings fluctuations from anticipated foreign currency cash flows totaled \$185 million at Dec. 31, 1997 (\$188 million at Dec. 31, 1996). During 1997 and 1996, the average fair values of, and the resultant gains and losses associated with, these contracts were not material.

Investments ■ The corporation's investments in equity companies, partnerships and other businesses generally involve joint ventures for which it is not practicable to determine fair values.

Long-Term Receivables ■ The fair values of long-term receivables are calculated using current interest rates and consideration of underlying collateral where appropriate. The fair value, which approximate the carrying values of \$85 million and \$51 million, are included in *Other assets* in the Consolidated Balance Sheet at Dec. 31, 1997 and 1996, respectively.

Debt ■ The corporation uses various types of financial instruments, including interest rate swaps and forward rate agreements, to manage exposure to financial market risk caused by interest rate fluctuations. An interest rate swap held at Dec. 31, 1997 and 1996, had a nominal carrying amount and fair value.

Carrying and Fair Values ■ The carrying values and fair values of the corporation's investments, long-term receivables and debt financial instruments at Dec. 31, 1997 and 1996, are summarized in the table below. Fair values are based on quoted market values, where available, or discounted cash flows (principally long-term debt).

Millions of dollars at December 31,	1997		1996	
	CARRYING AMOUNT	FAIR VALUE	CARRYING AMOUNT	FAIR VALUE
ASSETS (LIABILITIES)				
INVESTMENTS AND RECEIVABLES	\$ 158	\$ 158	\$ 128	\$ 128
SHORT- AND LONG-TERM DEBT	(1,887)	(1,956)	(1,599)	(1,619)

THREE

SUPPLEMENTARY BALANCE SHEET DETAIL

Millions of dollars at December 31.	1997	1996
NOTES AND ACCOUNTS RECEIVABLE		
TRADE	\$ 826	\$ 846
OTHER	178	211
	1,004	1,057
LESS: ALLOWANCE FOR DOUBTFUL ACCOUNTS	11	10
	\$ 993	\$ 1,047
INVENTORIES		
RAW MATERIALS AND SUPPLIES	\$ 135	\$ 114
WORK IN PROCESS	62	54
FINISHED GOODS	407	373
	\$ 604	\$ 541
PROPERTY, PLANT AND EQUIPMENT		
LAND AND IMPROVEMENTS	\$ 328	\$ 326
BUILDINGS	407	393
MACHINERY AND EQUIPMENT	6,230	5,795
CONSTRUCTION IN PROGRESS AND OTHER	742	645
	\$ 7,707	\$ 7,159
OTHER ASSETS		
DEFERRED CHARGES	\$ 227	\$ 193
INSURANCE RECOVERY RECEIVABLES	147	135
LONG-TERM RECEIVABLES	85	51
PATENTS, TRADEMARKS AND GOODWILL	96	113
	\$ 555	\$ 492
OTHER ACCRUED LIABILITIES		
ACCRUED ACCOUNTS PAYABLE	\$ 301	\$ 335
PAYROLLS	55	56
ENVIRONMENTAL REMEDIATION COSTS	68	58
POSTRETIREMENT BENEFIT OBLIGATION	34	33
EMPLOYEE PROFIT SHARING	55	51
OTHER	214	232
	\$ 727	\$ 765
OTHER LONG-TERM OBLIGATIONS		
ENVIRONMENTAL REMEDIATION COSTS	\$ 196	\$ 252
PRODUCT LIABILITY COSTS	174	170
IMPAIRMENT OF UNUSED OFFICE SPACE	136	151
POSTEMPLOYMENT BENEFITS	72	83
OTHER	160	155
	\$ 738	\$ 811
TRANSLATION AND OTHER EQUITY ADJUSTMENTS		
CANADA	\$ (54)	\$ (44)
EUROPE	(7)	18
FAR EAST & OTHER	(43)	(7)
	\$ (104)	\$ (33)

The operating profit of the Specialties & Intermediates segment for 1995 includes a \$48 million charge for postemployment benefits and an increase of \$12 million in depreciation expense related to a reduction in the depreciable lives of certain computer equipment. The operating profit of the Basic Chemicals & Polymers segment for 1995 includes a \$20 million charge for postemployment benefits. Other operating profit for 1995 includes a gain of \$381 million on the sales of the corporation's interest in UCAR International Inc. and a charge of \$191 million for future lease costs on unused office space, primarily at the corporation's headquarters.

Net sales, operating profit (loss) and identifiable assets by geographic area were as follows:

Millions of dollars	1997	1996	1995
NET SALES			
UNITED STATES & PUERTO RICO ^(a)	\$ 4,634	\$ 4,336	\$ 4,071
CANADA	172	147	142
EUROPE	685	664	719
LATIN AMERICA	255	228	227
FAR EAST & OTHER	756	731	729
INTERNATIONAL OPERATIONS	1,868	1,770	1,817
	\$ 6,502	\$ 6,106	\$ 5,888
OPERATING PROFIT (LOSS)			
UNITED STATES & PUERTO RICO	\$ 957	\$ 820	\$ 1,228
CANADA	29	28	36
EUROPE ^(b)	7	41	50
LATIN AMERICA	12	(11)	12
FAR EAST & OTHER	41	37	29
INTERNATIONAL OPERATIONS	89	95	127
INTERSEGMENT ELIMINATIONS	(1)	6	(7)
	\$ 1,045	\$ 921	\$ 1,348
IDENTIFIABLE ASSETS			
UNITED STATES & PUERTO RICO	\$ 5,501	\$ 4,977	\$ 4,433
CANADA	302	305	277
EUROPE	378	408	404
LATIN AMERICA	232	224	191
FAR EAST & OTHER	279	312	322
INTERNATIONAL OPERATIONS	1,191	1,249	1,194
INTERSEGMENT ELIMINATIONS	(6)	(6)	(5)
OTHER	278	326	634
	\$ 6,964	\$ 6,546	\$ 6,256

a) Includes export sales of \$894 million in 1997 (\$743 million in 1996 and \$732 million in 1995).

b) Included in 1997 are higher costs associated with expansion and maintenance of the corporation's Wilton, U.K. facility.

SIX

ACQUISITIONS AND DIVESTITURES

In April 1997, the corporation and Exxon Chemical Company formed Univation Technologies, LLC, a 50-50 joint venture for the research, development, marketing and licensing of polyethylene technology and metallocene catalysts.

In January 1996, the corporation purchased the polypropylene assets and business of Shell Oil Company. The purchased assets, located in the U.S., consist of Shell's polypropylene technology and manufacturing facilities and polypropylene assets previously held jointly by both companies.

In February 1996, the corporation purchased 95 percent of the outstanding shares of Companhia Alcoolquímica Nacional, a Brazilian producer of vinyl acetate monomer.

In July 1995, the corporation and two Kuwaiti corporations, Petrochemical Industries Company and Boubyan Petrochemical Company, formed EQUATE Petrochemical Company, a joint venture for development of a world-scale petrochemical complex in Kuwait. EQUATE commenced operations in 1997.

In March 1995, the corporation acquired 50 percent of the equity of Polimeri Europa S.r.l., a producer of ethylene and polyethylene resins, from EniChem S.p.A. for \$216 million. EniChem retained the other 50 percent.

In February 1995, the corporation purchased certain ethylene oxide derivative businesses from Imperial Chemical Industries of London for \$71 million.

In January 1995, the corporation and Mitsubishi Corporation concluded the sale of newly issued common stock of UCAR International Inc. to a new company formed by Blackstone Capital Partners II Merchant Banking Fund L.P. and a repurchase of certain shares by UCAR that resulted in Blackstone acquiring a 75 percent interest in UCAR. The corporation received \$343 million in net cash proceeds and retained a 25 percent equity interest in UCAR. This transaction resulted in a gain of \$220 million (\$154 million after-tax). In August 1995, the corporation joined in UCAR's initial public offering to sell its remaining equity interest in UCAR for net cash proceeds of \$199 million. This sale resulted in a gain of \$161 million (\$99 million after-tax).

An analysis of the difference between *Provision for income taxes* and the amount computed by applying the statutory Federal income tax rate to *Income Before Provision for Income Taxes* is as follows:

Year ended December 31,	PERCENTAGE OF PRE-TAX INCOME		
	1997	1996	1995
TAX AT STATUTORY FEDERAL RATE	35.0%	35.0%	35.0%
TAXES RELATED TO OPERATIONS OUTSIDE THE U.S.	(0.7)	(1.0)	0.1
U.S. STATE AND LOCAL TAXES BASED ON INCOME	0.3	0.3	1.0
FOREIGN SALES CORPORATION	(2.9)	(3.0)	(1.4)
BUSINESS CREDITS	(1.5)	(0.9)	(1.4)
OTHER, NET	(1.3)	(2.5)	(3.1)
CONSOLIDATED EFFECTIVE INCOME TAX RATE	28.9%	27.9%	30.2%

PARTNERSHIPS AND JOINT VENTURES

The following are financial summaries of 33 percent- to 50 percent-owned *Companies carried at equity*. The corporation's most significant companies carried at equity, classified as partnerships, include UOP LLC, Petromont and Company, Limited Partnership, Aspell Polymeres SNC, World Ethanol Company and Univation Technologies, LLC. The corporation purchased the balance of the Union Carbide/Shell polypropylene partnership in January 1996 (see NOTE SIX).

Millions of dollars	PARTNERSHIPS		
	1997	1996	1995
NET SALES ^(a)	\$2,076	\$2,109	\$2,146
COST OF SALES	1,242	1,338	1,312
DEPRECIATION	83	83	66
PARTNERSHIP INCOME	249	242	283
UCC SHARE OF PARTNERSHIP INCOME	\$ 133	\$ 144	\$ 152
CURRENT ASSETS	\$ 746	\$ 704	
NONCURRENT ASSETS	886	806	
TOTAL ASSETS	1,632	1,510	
CURRENT LIABILITIES	451	608	
NONCURRENT LIABILITIES	711	385	
TOTAL LIABILITIES	1,162	993	
NET ASSETS	470	517	
UCC EQUITY	\$ 278	\$ 251	

a) Includes \$208 million net sales to the corporation in 1997 (\$159 million in 1996 and \$177 million in 1995).

The corporation's companies earned at equity, classified as corporate investments, include Polimeri Europa S.r.l., EQUATE Petrochemical Company K.S.C., Nippon Unicar Company Limited, Alberta & Orient Glycol Company Limited, Asian Acetyls Co., Ltd., several smaller entities and, in 1995, UCAR International Inc.

Millions of dollars	CORPORATE INVESTMENTS		
	1997	1996	1995
NET SALES ^(a)	\$2,248	\$2,059	\$1,731
COST OF SALES	1,814	1,693	1,221
DEPRECIATION	109	129	119
NET INCOME (LOSS)	75	(6)	96
UCC SHARE OF NET INCOME (LOSS)	\$ 3	\$ (16)	\$ 47
CURRENT ASSETS	\$ 933	\$ 877	
NONCURRENT ASSETS	3,252	2,918	
TOTAL ASSETS	4,185	3,795	
CURRENT LIABILITIES	872	888	
NONCURRENT LIABILITIES	2,347	1,891	
TOTAL LIABILITIES	3,219	2,779	
NET ASSETS	966	1,016	
UCC EQUITY	\$ 412	\$ 444	

a) Includes \$156 million net sales to the corporation in 1997 (\$153 million in 1996 and \$167 million in 1995).

Dividends and distributions received from joint ventures and partnerships aggregated \$126 million in 1997 (\$141 million in 1996 and \$97 million in 1995).

ELEVEN

EARNINGS PER SHARE

Basic and diluted earnings per share (EPS) are calculated based upon the provisions of SFAS 128, adopted in 1997:

In millions (except share and per share amounts)

	1997	1996	1995
BASIC -			
INCOME BEFORE CUMULATIVE EFFECT OF CHANGE IN ACCOUNTING PRINCIPLE	\$ 676	\$ 593	\$ 925
LESS: DIVIDENDS ON ESOP SHARES, PRE-TAX	(9)	(13)	(13)
APPRECIATION ON ESOP SHARES REDEEMED FOR CASH	(23)	-	-
INCOME BEFORE CUMULATIVE EFFECT OF CHANGE IN ACCOUNTING PRINCIPLE ADJUSTED FOR BASIC CALCULATION	644	580	912
CUMULATIVE EFFECT OF CHANGE IN ACCOUNTING PRINCIPLE	(17)	-	-
NET INCOME-COMMON STOCKHOLDERS, ADJUSTED FOR BASIC CALCULATION	\$ 627	\$ 580	\$ 912
WEIGHTED AVERAGE SHARES OUTSTANDING FOR BASIC CALCULATION	128,185,093	131,029,621	137,219,676
EARNINGS PER SHARE -			
INCOME BEFORE CUMULATIVE EFFECT OF CHANGE IN ACCOUNTING PRINCIPLE	\$ 5.02	\$4.43	\$6.65
CUMULATIVE EFFECT OF CHANGE IN ACCOUNTING PRINCIPLE	(0.13)	-	-
NET INCOME-COMMON STOCKHOLDERS	\$4.89	\$4.43	\$6.65
DILUTED -			
INCOME BEFORE CUMULATIVE EFFECT OF CHANGE IN ACCOUNTING PRINCIPLE, ADJUSTED FOR BASIC CALCULATION	\$ 644	\$ 580	\$ 912
PLUS: DIVIDENDS ON ESOP SHARES, PRE-TAX	9	13	13
LESS: ADDITIONAL ESOP CONTRIBUTION RESULTING FROM ASSUMED CONVERSION OF ESOP SHARES	(1)	(1)	(1)
INCOME BEFORE CUMULATIVE EFFECT OF CHANGE IN ACCOUNTING PRINCIPLE, ADJUSTED FOR DILUTED CALCULATION	652	592	924
CUMULATIVE EFFECT OF CHANGE IN ACCOUNTING PRINCIPLE	(17)	-	-
NET INCOME-COMMON STOCKHOLDERS, ADJUSTED FOR DILUTED CALCULATION	\$ 635	\$ 592	\$ 924
WEIGHTED AVERAGE SHARES OUTSTANDING FOR BASIC CALCULATION	128,185,093	131,029,621	137,219,676
ADD: EFFECT OF STOCK OPTIONS	4,034,969	4,495,656	4,367,153
EFFECT OF EQUITY PUT OPTIONS	-	403	-
SHARES ISSUABLE UPON CONVERSION OF THE CORPORATION'S CONVERTIBLE ESOP SHARES	11,739,036	16,120,754	16,341,367
WEIGHTED AVERAGE SHARES OUTSTANDING, ADJUSTED FOR DILUTED CALCULATION	143,959,098	151,646,434	157,928,196
EARNINGS PER SHARE -			
INCOME BEFORE CUMULATIVE EFFECT OF CHANGE IN ACCOUNTING PRINCIPLE, ADJUSTED FOR DILUTED CALCULATION	\$ 4.53	\$3.90	\$5.85
CUMULATIVE EFFECT OF CHANGE IN ACCOUNTING PRINCIPLE	(0.12)	-	-
NET INCOME-COMMON STOCKHOLDERS, ADJUSTED FOR DILUTED CALCULATION	\$ 4.41	\$3.90	\$5.85

Postretirement Benefits Other Than Pensions ■ The corporation provides health care and life insurance benefits for eligible retired employees and their eligible dependents. These benefits are provided through various insurance companies and health care providers.

The obligation is determined by application of the terms of health and life insurance plans, together with relevant actuarial assumptions and health care cost trends projected to increase annually at rates of 8.0 percent in 1998 and 7.5 percent in 1999, falling incrementally to a 5.0 percent annual increase in 2004 and thereafter.

The effect of a 1 percent annual increase in the assumed health care cost trend rates would increase the accumulated postretirement benefit obligation at Dec. 31, 1997 by \$33 million, and the aggregate of service and interest cost components of net periodic postretirement benefit costs by \$4 million. Measurement of the accumulated postretirement benefit obligation was based on the same actuarial assumptions used in the pension calculations.

The corporation has funded postretirement benefits for certain retirees who retired prior to Dec. 31, 1988. The funds are invested primarily in common stocks.

The components of net periodic postretirement benefit cost are as follows:

<i>Millions of dollars for the year ended December 31,</i>	1997	1996	1995
(GAIN) LOSS ON PLAN ASSETS			
ACTUAL	\$ (9)	\$ (4)	\$ (8)
DEFERRED	7	2	6
	(2)	(2)	(2)
SERVICE COST – BENEFITS EARNED DURING THE PERIOD	14	13	11
INTEREST COST	33	31	35
AMORTIZATION	(21)	(21)	(21)
NET PERIODIC POSTRETIREMENT BENEFIT COST	\$ 24	\$ 21	\$ 23

The funded status of the postretirement benefit obligation is as follows:

<i>Millions of dollars at December 31,</i>	1997	1996
ACCUMULATED POSTRETIREMENT BENEFIT OBLIGATIONS		
RETIREES	\$ 382	\$366
FULLY ELIGIBLE ACTIVE PLAN PARTICIPANTS	90	79
OTHER ACTIVE PLAN PARTICIPANTS	31	27
	503	472
FAIR VALUE OF PLAN ASSETS	17	17
ACCUMULATED POSTRETIREMENT BENEFITS IN EXCESS OF PLAN ASSETS	486	455
UNRECOGNIZED GAINS – NET	12	51
ACCRUED UNFUNDED POSTRETIREMENT BENEFIT OBLIGATIONS	\$ 498	\$506

The accumulated postretirement benefit obligation for retirees is net of \$131 million at Dec. 31, 1997 (\$130 million at Dec. 31, 1996), which is reimbursed to the corporation in part by previously owned businesses under ongoing benefit-sharing agreements.

Deferred Compensation Plan ■ Since Jan. 1, 1995, the corporation has provided an unfunded, nonqualified deferred compensation plan to certain key employees, offering them an election to defer a portion of their gross pay. The corporation's obligation to employees is adjusted to reflect changes in the market values of employees' investment choices. With limited exceptions, participants' deferred account balances are scheduled for payment at or after full retirement.

Postemployment Benefits ■ During 1995 the corporation recorded a charge of \$68 million (\$49 million after-tax) for postemployment benefits. The charge included severance costs relating to future staff reductions associated with work process simplification efforts and changes in the corporation's severance benefits.

Changes in outstanding fixed price options were as follows:

Shares in thousands	1997		1996		1995	
	SHARES	WEIGHTED AVERAGE EXERCISE PRICE	SHARES	WEIGHTED AVERAGE EXERCISE PRICE	SHARES	WEIGHTED AVERAGE EXERCISE PRICE
OUTSTANDING AT JANUARY 1	12,782	\$21.45	13,350	\$18.54	13,807	\$15.70
GRANTED	1,508	46.31	1,166	45.55	1,270	40.38
EXERCISED	(1,717)	13.45	(1,569)	13.05	(1,667)	11.37
CANCELED OR EXPIRED	(40)	38.47	(165)	36.00	(60)	27.25
OUTSTANDING AT DECEMBER 31	12,533	25.48	12,782	21.45	13,350	\$18.54
OPTIONS EXERCISABLE AT DECEMBER 31	9,889		10,460		10,200	

Options were exercised during 1997 at prices ranging from \$6.70 to \$45.63 per share (\$6.70 to \$28.63 per share during 1996 and \$1.00 to \$21.63 per share during 1995).

The following table summarizes information about fixed price option shares outstanding at Dec. 31, 1997:

Shares in thousands	SHARES OUTSTANDING	WEIGHTED AVERAGE REMAINING CONTRACTUAL LIFE	WEIGHTED AVERAGE EXERCISE PRICE
RANGE OF EXERCISE PRICES			
\$ 6.70 TO \$ 9.69	2,635	3.3 YEARS	\$ 8.40
\$11.37 TO \$16.75	2,439	4.3 YEARS	\$ 15.76
\$21.63 TO \$28.63	3,666	6.4 YEARS	\$24.78
\$39.88 TO \$46.31	3,793 ^(a)	9.0 YEARS	\$44.28
	12,533		

a) At Dec. 31, 1997, 1.149 million options were exercisable at a price of \$40.38.

Had compensation cost related to the fixed price options been recorded at fair value on the dates of grant in accordance with SFAS 123, the effect on the corporation's net income and EPS amounts would have been as follows:

Millions of dollars (except per share figures), for the year ended December 31,		1997	1996	1995
NET INCOME-				
COMMON STOCKHOLDERS	AS REPORTED	\$ 652	\$ 583	\$ 915
	PRO FORMA	\$ 639	\$ 576	\$ 913
BASIC EPS	AS REPORTED	\$4.89	\$4.43	\$6.65
	PRO FORMA	\$4.79	\$4.37	\$6.63
DILUTED EPS	AS REPORTED	\$4.41	\$3.90	\$5.85
	PRO FORMA	\$4.32	\$3.86	\$5.84

The Black-Scholes Option Pricing Model was used to estimate the fair values of options granted during 1997, 1996 and 1995. The assumptions used for these grants included a 6-year average expected life for all years, and zero-coupon U.S. government risk free interest rates of 5.92%, 5.95%, and 5.70%, current dividend yields of 1.73%, 1.78%, and 1.75%, and volatility of 28.77%, 28.00%, and 28.78% for the years ended 1997, 1996 and 1995, respectively. The weighted average

fair values of options granted during the years 1997, 1996, and 1995 were \$15.54, \$15.31 and \$13.43, respectively.

On Sept. 24, 1997, the board approved the 1997 Union Carbide Corporation EPS Incentive Plan for a limited number of senior managers. It is designed to grant awards if the corporation achieves \$4.00 or more diluted earnings per share performance during 1999 and 2000. The plan requires these senior managers to put an amount equivalent to a portion of their annual base pay at risk, up to 100 percent, should diluted earnings per share not equal or exceed \$4.00 in the year 2000. The amount at risk will be deducted from compensation over three years and is converted to units equivalent to common stock using a \$47.75 share price, the closing price of the corporation's common stock on the date the plan was approved by the board of directors. Participants could be awarded up to four times the number of units at risk for each of the years 1999 and 2000, depending on the extent to which the goals of the plan are exceeded. Participants will also be credited with dividend-equivalents in the form of additional units. Payments under the plan will be in cash and are scheduled for 2002, 2003 and 2004. Failure to meet the requirements of the plan will result in forfeiture of the amounts at risk.

SEVENTEEN

COMMITMENTS AND CONTINGENCIES

Purchase Agreements ■ The corporation has three major agreements for the purchase of ethylene-related products and two other purchase agreements in the U.S. and Canada. Total purchases under these agreements were \$245 million, \$233 million and \$251 million in 1997, 1996 and 1995, respectively. The net present value of the fixed and determinable portion of obligations under these purchase commitments at Dec. 31, 1997 (at current exchange rates, where applicable) is presented in the following table.

<i>Millions of dollars, year ending December 31,</i>	
1998	\$ 69
1999	60
2000	31
2001	23
2002	20
2003 TO EXPIRATION OF CONTRACTS	88
TOTAL	\$291

Environmental ■ The corporation is subject to loss contingencies resulting from environmental laws and regulations, which include obligations to remove or remediate the effects on the environment of the disposal or release of certain wastes and substances at various sites. The corporation has established accruals in current dollars for those hazardous waste sites where it is probable that a loss has been incurred and the amount of the loss can reasonably be estimated. The reliability and precision of the loss estimates are affected by numerous factors, such as different stages of site evaluation, the allocation of responsibility among potentially responsible parties and the assertion of additional claims. The corporation adjusts its accruals as new remediation requirements are defined, as information becomes available permitting reasonable estimates to be made, and to reflect new and changing facts.

At Dec. 31, 1997, the corporation had established environmental remediation accruals in the amount of \$264 million (\$310 million in 1996). These accruals have two components, estimated future expenditures for site investigation and cleanup and estimated future expenditures for closure and postclosure activities. In addition, the corporation had environmental loss contingencies of \$159 million at Dec. 31, 1997.

The corporation has sole responsibility for the remediation of approximately 36 percent of its environmental sites for which accruals have been established. These sites are well advanced in the investigation and cleanup stage. The corporation's environmental accruals at Dec. 31, 1997, included \$197 million for these sites (\$222 million at Dec. 31, 1996), of which \$79 million (\$92 million at Dec. 31, 1996) was for estimated future expenditures for site investigation and cleanup and \$118 million (\$130 million at Dec. 31, 1996) was for estimated future expenditures for closure and postclosure activities. In addition, \$87 million of the corporation's environmental loss contingencies at Dec. 31, 1997, related to these sites. The site with the largest total potential cost to the corporation is a nonoperating site. Of the above accruals, this site accounted for \$31 million (\$32 million at Dec. 31, 1996), of which \$17 million (\$18 million at Dec. 31, 1996) was for estimated future expenditures for site investigation and cleanup and \$14 million (\$14 million at Dec. 31, 1996) was for estimated future expenditures for closure and postclosure activities. In addition, \$20 million of the above environmental loss contingencies related to this site.

The corporation does not have sole responsibility at the remainder of its environmental sites for which accruals have been established. All of these sites are in the investigation and cleanup stage. The corporation's environmental accruals at Dec. 31, 1997, included \$67 million for estimated future expenditures for site investigation and cleanup at these sites (\$88 million at Dec. 31, 1996). In addition, \$72 million of the corporation's environmental loss contingencies related to these sites. The largest two of these sites are also nonoperating sites. Of the above accruals, these sites accounted for \$29 million (\$37 million at Dec. 31, 1996) for estimated future expenditures for site investigation and cleanup. In addition, \$20 million of the above environmental loss contingencies related to these sites.

Worldwide expenses related to environmental protection for compliance with Federal, state and local laws regulating solid and hazardous wastes and discharge of materials to air and water, as well as for waste site remedial activities, totaled \$100 million in 1997, \$110 million in 1996 and \$138 million in 1995.

Management's Statement of Responsibility for Financial Statements

Union Carbide Corporation's financial statements are prepared by management, which is responsible for their fairness, integrity and objectivity. The accompanying financial statements have been prepared in conformity with generally accepted accounting principles and, accordingly, include amounts that are estimates and judgments. All historical financial information in this annual report is consistent with the accompanying financial statements.

The corporation maintains accounting systems, including internal accounting controls monitored by a staff of internal auditors, that are designed to provide reasonable assurance of the reliability of financial records and the protection of assets. The concept of reasonable assurance is based on recognition that the cost of a system must not exceed the related benefits. The effectiveness of those systems depends primarily upon the careful selection of financial and other managers, clear delegation of authority and assignment of accountability, inculcation of high business ethics and conflict-of-interest standards, policies and procedures for coordinating the management of corporate resources and the leadership and commitment of top management.

The corporation's financial statements are audited by KPMG Peat Marwick LLP, independent certified public accountants, in accordance with generally accepted auditing standards. These standards

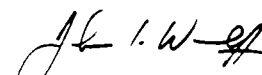
provide for the auditors to consider the corporation's internal control structure to the extent they deem necessary in order to issue their opinion on the financial statements.

The Audit Committee of the board of directors, which consists solely of nonemployee directors, is responsible for overseeing the functioning of the accounting system and related controls and the preparation of annual financial statements. The Audit Committee recommends to the board of directors the selection of the independent auditors, which is submitted to the stockholders for ratification. The Audit Committee periodically meets with the independent auditors, management and internal auditors to review and evaluate their accounting, auditing and financial reporting activities and responsibilities. The independent and internal auditors have full and free access to the Audit Committee and meet with the committee, with and without management present.



William H. Joyce
Chairman, President and
Chief Executive Officer

Danbury, Conn.
Jan. 16, 1998



John K. Wulff
Vice-President, Chief Financial
Officer and Controller

Independent Auditors' Report

 Peat Marwick LLP

To the Stockholders and Board of Directors of
Union Carbide Corporation:

We have audited the accompanying consolidated balance sheet of Union Carbide Corporation and subsidiaries as of Dec. 31, 1997 and 1996, and the related consolidated statements of income, stockholders' equity, and cash flows for each of the years in the three-year period ended Dec. 31, 1997. These consolidated financial statements are the responsibility of the company's management. Our responsibility is to express an opinion on these consolidated financial statements based on our audits.

We conducted our audits in accordance with generally accepted auditing standards. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit

includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of Union Carbide Corporation and subsidiaries at Dec. 31, 1997 and 1996, and the results of their operations and their cash flows for each of the years in the three-year period ended Dec. 31, 1997, in conformity with generally accepted accounting principles.



KPMG Peat Marwick LLP
Stamford, Conn.
Jan. 16, 1998

Directors and Corporate Officers

DIRECTORS

John J. Creedon is retired president and chief executive officer of Metropolitan Life Insurance Company. A Carbide director since 1984, he chairs the Audit Committee and serves on the Compensation & Management Development, Executive and Health, Safety and Environmental Affairs (HS&EA) Committees.

C. Fred Fetterolf is a retired director, president and chief operating officer of Aluminum Company of America. A UCC director since 1987, he chairs the HS&EA Committee and serves on the Audit, Compensation & Management Development and Nominating Committees.

Joseph E. Geoghan is vice-president, general counsel and secretary of Union Carbide Corporation and has been a director since 1990. He serves on the Executive and Public Policy Committees.

Rainer E. Gut is chairman of Credit Suisse Group, Zurich, Switzerland, Credit Suisse First Boston and Credit Suisse. A UCC board member since 1994, he is a member of the Compensation & Management Development, Finance & Pension and Nominating Committees.

Vernon E. Jordan, Jr. is a senior partner of Akin, Gump, Strauss, Hauer & Feld LLP. He is chairman of the Nominating Committee and a member of the Executive, Finance & Pension and Public Policy Committees. He has been a board member since 1987.

William H. Joyce is chairman, president and chief executive officer of Union Carbide Corporation. A director since 1992, he is chairman of the Executive Committee.

Robert D. Kennedy is retired chairman and chief executive officer of Union Carbide Corporation and has been a director since 1985. He serves on the Audit, Executive, Nominating and Public Policy Committees.

Ronald L. Kuehn, Jr. is a director and chairman, president and chief executive officer of Sonat, Inc. A UCC board member since 1984, he chairs the Compensation & Management Development Committee and serves on the Finance & Pension and HS&EA Committees.

Rozanne L. Ridgway is former assistant secretary of state for Europe and Canada. A director since 1990, she chairs the Public Policy Committee and is a member of the Audit, HS&EA and Nominating Committees.

James M. Ringler is a director and chairman, president and chief executive officer of Premark International, Inc. Elected a director in 1996, he is a member of the Compensation & Management Development and the Finance & Pension Committees.

William S. Sneath is a director of various corporations and retired chairman and chief executive officer of Union Carbide Corporation. He chairs the Finance & Pension Committee and serves on the Executive, HS&EA and Nominating Committees. He has been a director since 1969.

CORPORATE OFFICERS

William H. Joyce
Chairman of the Board, President and Chief Executive Officer

Joseph S. Byck
Vice-President, Strategic Planning, Investor Relations and Public Affairs

James F. Flynn
Vice-President, General Manager, Solvents, Intermediates and Monomers

Joseph E. Geoghan
Vice-President, General Counsel and Secretary

Malcolm A. Kessinger
Vice-President, Human Resources

Lee P. McMaster
Vice-President, General Manager, Ethylene Oxide/Glycol

Joseph C. Soviero
Vice-President, Corporate Ventures

Roger B. Staub
Vice-President, General Manager, UNIPOL Systems

John K. Wulff
Vice-President, Chief Financial Officer and Controller

OTHER SENIOR MANAGEMENT

Eugene J. Boros
Vice-President, General Manager, Specialty Polymers and Products, UCAR Emulsion Systems

David L. Brucker
Vice-President, Engineering and Operations

Ron J. Cottle
Vice-President, Health, Safety and Environment

John L. Gigerich
Vice-President, Information Systems

Kevin P. Lynch
Vice-President, General Manager, UNIPOL Polymers

Philip F. McGovern
Vice-President, Tax

Gordon D. Mounts
Vice-President, General Manager, Industrial Performance Chemicals

F. Don Ryan
Vice-President, General Manager, Specialty Polyolefins and
Vice-President, Purchasing

Lee C. Stewart
Vice-President and Treasurer

Vince F. Villani
Vice-President, General Manager, Olefins

Donald R. Wood
Vice-President, Polypropylene Resins

John P. Yimoyines
Vice-President, Venture Management



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cc. G. Abel
T. Thompson
J. Balogh
M. Masters

April 10, 1992

NOTICE TO ALL VENDORS, CUSTOMERS AND TENANTS

Effective April 13, 1992, our new telephone number and fax line
for the Linden, New Jersey Terminal will be as follows:

Phone: 908-862-1666 FAX: 908-474-1619

Please change your records accordingly and we hope that this
change has not caused you any inconvenience.



INTERNATIONAL
TECHNOLOGY
CORPORATION

RECEIVED

APR 27 1988

UNION CARBIDE CORP.
SOMERSET REGION OFFICE
SOMERSET, N.J.

April 22, 1988

RECEIVED

APR 27 1988

R.A. D'AMICO

Mr. Scott Hickes
Union Carbide Corporation
Linde Division
308 Harper Drive
Moorestown, NJ 08057

RE: Linden Plant No. 3 Compressor Cleaning

Dear Mr. Hickes:

The total disassembly and cleaning of compressor No. 3 at the Linden Plant was completed on March 24, 1988. A final inspection and review of preliminary analytical data was conducted by Mr. Greg Courson, Regional Technical Consultant, La Porte Texas Plant. Prior to disassembly, mercury vapor readings were taken in the vicinity of the compressor and at various points inside the compressor. The internal measurements were obtained by removing plugs, valve port covers, and access plates. All ambient background readings obtained, prior to opening any process access ports on compressor No. 3, were nondetectable for mercury (<0.01 mg/cm). The internal mercury vapor measurements obtained varied from nondetectable to off the scale readings (>1.0 mg/cm). The ports that had high mercury readings internally diminished to nondetectable levels within inches outside the opening. These readings are attached in the "real time air monitoring log". As a result of the above observations it was determined that system encapsulation/isolation would not be required for the disassembly and cleaning, and that only the mechanics performing work on the equipment would require personnel protective equipment.

The disassembly and cleaning procedure incorporated continuous ambient air monitoring by a health and safety technician, along with vacuuming of any visible free mercury as it appeared.

Approximately thirty pounds of free mercury was collected by vacuuming during disassembly. Most of the mercury was located at the low points in the system, intercoolers, receivers, piping, etc. As parts were disassembled, they were positioned over a trough and given a thorough degreasing, using a solvent manufactured by Mantek Corp. called "Tri-Matic" (MSD sheet attached), by scrub brush, pressure washing, followed by a water rinse. The next step was to scrub and pressure wash each piece using a solution of water and HgX, a mercury absorbent material followed by a thorough water rinse. The HgX MSD sheet is attached.

At this point post decontamination wipe samples were taken at various locations throughout the compressor, then the above cleaning procedure was repeated for the entire

Regional Office

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IT Corporation is a wholly owned subsidiary of International Technology Corporation

Mr. Scott Hickes
Union Carbide Corporation
April 22, 1988
Page 2.

INTERNATIONAL TECHNOLOGY CORPORATION

compressor and piping, and another set of wipe samples were taken. A total of 29 wipe samples were taken, including Field Blanks and 24 hour soaking water from the inner cooler. The sampling procedure used is described in the attached IT procedure no. SMP4625-06. Due to the size and shape of the compressor parts a 100 square cm wipe area template was used for all samples. The analytical results, sample collection logs, and chain of custody sheets are attached.

As can be seen from the results, there were some very high mercury levels indicated, up to 160 MG/wipe, probably the result of catching some free mercury on the sample pad. All parts that indicated high mercury levels were subject to a thorough visual inspection and vacuuming followed by a third and fourth cleaning using the above procedures. While analyzing the data it is important to note that the wipe samples were not taken at the identical location for No. 1 and No. 2 analysis on each piece, but rather from immediately adjacent areas. This was done to eliminate the influence of the wipe sampling procedure on the overall cleaning procedure. By disregarding the very high analytical results the average of the second wipe results is .291 mg/wipe. It is appropriate to disregard the high results because these parts were subsequently recleaned, although, no further analytical was performed. It appears that the "level of clean" that can be achieved by this method is in the order of the .291 average, with additional cleaning yielding similar results.

The small intercooler, after the second cleaning, was filled with clean water and left to soak for a 24 hour period. This water was drained and sampled, sample #D1858, yielding a mercury content of .011 ppm, well below the .05 ppm allowable limit. The wastewater generated from the cleaning process was stored in a 5,000 gallon holding tank, the analysis from this water indicated a mercury content of 16 ppm, sample #D1864. This water will be disposed of at a proper facility.

Compressor No. 3, now located in Texas, is to be completely rebuilt, including machining of cylinders and pistons, prior to being placed into operation. There are some precautions that must be observed during this procedure to minimize worker exposure to any residual mercury present. Mechanics and helpers working on the compressor during disassembly and assembly need not be concerned with mercury vapor inhalation, but with ingestion by mouth from skin and clothing contamination from direct contact with the compressor parts. The ingestion risk can be minimized by requiring all mechanics and helpers to wear protective gloves and coveralls while working, by following strict sanitary practices, washing hands and face before eating or smoking, no eating or smoking in the work area, and by removal and disposal of protective clothing when exiting the work area. Once the compressor is completely rebuilt, reassembled, and painted, the trades performing the piping, electrical and instrumentation connection should not be required to observe the above precautions. Subsequent routine maintenance performed on the compressor internals should observe the ingestion precautions as above.

Mr. Scott Hickes
Union Carbide Corporation
April 22, 1988
Page 3.

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If the working surfaces of the compressor are to be machined during this rebuilding, there are some precautions to be observed by the machinists during this work. While handling, setup, and measuring of the compressor parts, the same precautions against mercury ingestion should be observed. Furthermore, depending on the method of machining to be employed, there is the possibility that the heat generated during machining will volatilize any mercury that is present on the surfaces of the parts. If a dry cut (no liquid coolant/lubricant) machining process is used, vapors and airborne particles can be captured by use of a mercury vacuum, with the pickup nozzle positioned in the vicinity of the cutting tool. The cutting chips and dust generated from this operation should be kept separate from the normal machine shop waste until a disposal method is determined. If a liquid coolant/lubricant is used during the machining process the probability of generating mercury vapors should be nonexistent, but the recirculating liquid should be drained and contained separately upon completion of work. An analysis will be required to determine proper disposal for this liquid. The machine shop performing this work should be instructed to thoroughly clean all chips, waste and oil from the machines they will be using before and after working on the compressor parts.

By following the above procedures there should be minimal risk of exposure to the machinists working on these parts, but, to be extremely conservative a mercury vapor reading could be taken in the vicinity of the cutting tool during the first cuts just to document that no vapors are being generated.

Prior to placing this compressor into operation, I would recommend that a mercury capturing filter be installed on the discharge of this unit with sample ports located on the upstream and downstream sides of the filter. This will permit an evaluation of mercury levels and filter performance, and determine whether continued use of a filter is required.

If you should have any questions or require further information, please give me a call.

Regards,

Tom Hernon



TH:sw
#305281-02-01

ENG/s521-ltr

**SUMMARY OF RESULTS
FOR
UNION CARBIDE
LINDEN, NEW JERSEY**

<u>Sample Date</u>	<u>Sample I.D.</u>	<u>Sample Type</u>	<u>Description/ Location</u>	<u>Analytical Parameter</u>	<u>Results mg/wipe</u>
3/11/88	D1834	Wipe	Compressor #3, 3rd stage Piston,		
			Post Clean I; WP-1	Hg	0.090
3/22/88	D1854	Wipe	Post Clean II; WP-20	Hg	0.13
3/11/88	D1835	Wipe	Compressor #3, 1st stage suction valve, Post Clean I, WP-2	Hg	0.26
3/11/88	D1836	Wipe	Compressor #3, 1st stage valve covers, Post Clean I; WP-3	Hg	81
3/15/88	D1841	Wipe	Post Clean II; WP-8	Hg	8.2
3/11/88	D1837	Wipe	Compressor #3, 1st stage cylinder Pre Clean; WP-4	Hg	3.0
3/22/88	D1855	Wipe	Post Clean I; WP-21	Hg	0.62
3/11/88	D1838	Wipe	Compressor #3, 2nd stage cylinder Pre Clean; WP-5	Hg	0.068
3/22/88	D1856	Wipe	Post Clean; WP-22	Hg	0.11
3/11/88	D1839	Wipe	Compressor #3, Cross head Pre Clean; WP-6	Hg	0.19
3/15/88	D1842	Wipe	Compressor #3, 2nd stage valve cover, Post Clean; W-9	Hg	2.0
3/15/88	D1843	Wipe	Compressor #3, 4th stage cylinder Post Clean I; WP-10	Hg	2.2
3/18/88	D1843	Wipe	Post Clean II, WP-16	Hg	1.4
3/22/88	D1857	Wipe	Post Clean III, WP-23	Hg	0.23
3/18/88	D1845	Wipe	Compressor #3, Small cooler Post Clean; WP-12	Hg	0.18
3/22/88	D1857	Wipe	Post Clean II, WP-25	Hg	0.64
3/22/88	D1858	Water	Post Clean II, Water	Hg	0.011
3/18/88	D1846	Wipe	Compressor #3, Lower heat exchanger Post Clean I; WP-13	Hg	0.11
3/22/88	D1860	Wipe	Post Clean II; WP-26	Hg	160
3/18/88	D1847	Wipe	Compressor #3, Upper heat exchanger Post Clean I; WP-14	Hg	5.8
3/22/88	D1861	Wipe	Post Clean II, WP-27	Hg	46

**SUMMARY OF RESULTS
FOR
UNION CARBIDE
LINDEN, NEW JERSEY**

<u>Sample Date</u>	<u>Sample I.D.</u>	<u>Sample Type</u>	<u>Description/ Location</u>	<u>Analytical Parameter</u>	<u>Results mg/wipe</u>
3/18/88	D1848	Wipe	Compressor #3, Platform		
			Post Clean I, WP-15	Hg	0.16
3/22/88	D1862	Wipe	Post Clean II; WP-28	Hg	0.23
3/22/88	D1852	Wipe	Compressor #1, Intake valve cover		
			Pre Clean; WP-18	Hg	2.6
3/22/88	D1863	Wipe	Post Clean I; WP-29	Hg	1.8
3/22/88	D1864	Water	1,000 Water storage tank	Hg	16
3/11/88	D1840	Wipe	Field Blank; WP-7	Hg	<0.0002
3/15/88	D1844	Wipe	Field Blank; WP-11	Hg	0.0004
3/18/88	D1850	Wipe	Field Blank; WP-17	Hg	0.0002
3/22/88	D1853	Wipe	Field Blank; WP-19	Hg	<0.0002
3/22/88	D1865	Water	Field Blank	Hg	0.0006

MATERIAL SAFETY DATA SHEET

Information on this form is furnished solely for the purpose of compliance with the Occupational Safety and Health Act of 1970 and shall not be used for any other purpose. Use or dissemination of all or any part of this information for any other purpose may result in a violation of law or constitute grounds for legal action.

SECTION I

MANUFACTURER'S NAME ACTON ASSOCIATES, INC.		EMERGENCY TELEPHONE NO. 717 / 654-0612
ADDRESS (Number, Street, City, State, and ZIP Code) 100 Thompson Street, Pittston, Pa. 18640		
CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS HgX* Mercury Decontaminant
CHEMICAL FAMILY	FORMULA	

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)
N. A. = Not Applicable					

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)		SPECIFIC GRAVITY (H ₂ O=1)	Est. above 1	(No Data)
VAPOR PRESSURE (mm Hg.)	N. A.	PERCENT VOLATILE BY VOLUME (%)		N. A.
VAPOR DENSITY (AIR=1)	N. A.	EVAPORATION RATE (_____=1)		N. A.
SOLUBILITY IN WATER	Appreciable			
APPEARANCE AND ODOR A white granular product with no odor				

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	N. A.	FLAMMABLE LIMITS	LeI	UeI
		Not Flammable		
EXTINGUISHING MEDIA	N. A.			
SPECIAL FIRE FIGHTING PROCEDURES	N. A.			
UNUSUAL FIRE AND EXPLOSION HAZARDS				
High temperatures may cause evolution of toxic SO ₂ or H ₂ S gases				

MATERIAL SAFETY DATA SHEET

KCJ 7/82

U.S. DEPARTMENT OF LABOR
OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

NOTE: REQUIRED UNDER USDL SAFETY AND HEALTH REGULATIONS FOR SHIP REPAIRING, SHIP BUILDING AND SHIPBREAKING. (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME
Mantek; Div. of NCH Corporation
ADDRESS (NUMBER, STREET, CITY, STATE & ZIP CODE)
P.O. Box 22263; Dallas, TX. 75222
CHEMICAL NAME & SYNONYMS
CHEMICAL FAMILY

EMERGENCY TELEPHONE NUMBER
214-438-4144 Ext.013

TRADE NAME & SYNONYMS
TRIMATIC
FORMULA

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES & SOLVENTS	%	TLV (UNITS)	ALLOYS AND METALLIC COATINGS	%	TLV (UNITS)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS OR GASES

% TLV (UNITS)

No hazardous ingredients per 27 CFR 1910.1

SECTION III - PHYSICAL DATA

BOILING POINT (°F)	210 OF	SPECIFIC GRAVITY (H ₂ O=1)	1.090 + 1.110
VAPOR PRESSURE (mm Hg.)	20	PERCENT, VOLATILE BY VOLUME (%)	80
VAPOR DENSITY (AIR=1)	.6	EVAPORATION RATE (BuAc=1)	.10
SOLUBILITY IN WATER	Comp.	pH=11	
APPEARANCE AND ODOR	Green transparent, semi-viscous liquid with little odor		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (METHOD USED)	FLAMMABLE LIMITS	LEL	UEL
None			
EXTINGUISHING MEDIA			
None necessary			
SPECIAL FIRE FIGHTING PROCEDURES			

UNUSUAL FIRE & EXPLOSION HAZARDS

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

No systemic effects noted.

EMERGENCY & FIRST AID PROCEDURES

Eyes: Flush with water for 15 minutes. Then see a physician.

Skin: Flush with water 3-5 minutes.

SECTION VI - REACTIVITY DATA

CONDITIONS TO AVOID

STABILITY

☒ STABLE☐ UNSTABLE

INCOMPATIBILITY MATERIALS TO AVOID

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS
POLYMERIZATION☒ WILL NOT
OCCUR☐ MAY OCCUR

CONDITIONS TO AVOID

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Mop up and/or flush down drain.

WASTE DISPOSAL METHOD

Mop up and/or flush down drain.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (SPECIFY TYPE)

LOCAL EXHAUST

SPECIAL

VENTILATION

MECHANICAL GENERAL

OTHER

PROTECTIVE GLOVES

rubber

EYE PROTECTION

goggles, if spraying

OTHER PROTECTIVE EQUIPMENT

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING & STORING

Follow label directions. Keep out of eyes.

OTHER PRECAUTIONS

KEEP OUT OF REACH OF CHILDREN

REAL TIME AIR MONITORING LOG

 PROJECT NAME UNION CARBIDE

 LOCATION LINDEN, NEW JERSEY

 PROJECT NO. 305281

Date	Analyst	Time	Instrument (Mfg/Model/ Serial No.)	Calibration Date & Cpd.	Compound Measured	Span Set or Sens. Cal.	Conc. (Units)	Location/Activity/Comments
8	W.C. HOUSEMAN		BACHARACH MODEL MV-2	4/14/87	MERCURY	0-0.2 mg/l ³		NO. 3 COMPRESSOR
		0900					0.5-0.6	1st stage suction valve ^{OPENING} gear
							0.01-0.06	1st stage suction valve COVER
							0.9-1.0	2nd stage DISCHARGE OPENING
							0.1	3rd stage DISCHARGE VALVE PORT
							0.05-0.06	4 th stage DISCHARGE VALVE PORT
							>1.0	BOTTOM SECTION OF SNUBBER (^{PRIMARY} RECEIVER)
							0.05	" " " " 1" from opening
							N.D.	GEAR CASE - opposite COMPRESSOR
							N.D.	" " - COMPRESSOR side
							0.1	1st stage suction HEAD ^(IN PIPING)
							0.75	DRAIN TRAP FOR 3rd stage DISCHARGE
✓		1150	✓				0.1-0.2	3rd stage COOLER
							N.D.	5 th stage WATER JACKET
							N.D.	INSIDE 5 th stage

REAL TIME AIR MONITORING LOG

 PROJECT NAME: Union Carbide

 LOCATION: Linden, NJ

 PROJECT NO. 305281

Date	Analyst	Time	Instrument (Mfg/Model/ Serial No.)	Calibration Date & Cpd.	Compound Measured	Span Set or Sens. Cal.	Conc. (Units)	Location/Activity/Comments
						0.01		
8-8	Unhee Kim	3:00 pm	Buchanan Model MV-2	4-14-87	Mercury		mg/m ³	No. 3 Compressor
							0.5	1st Stage suction valve opening
							0.1	Breathing Zone 1 ft away
							0.1	2nd Stage discharge opening
							0.05-0.1	Breathing Zone
							<0.1	3rd Stage discharge valve part
							0.1-0.2	Breathing zone
							<0.1	4th stage disch part
							0.1-0.2	Breathing Zone
							>1.0	Primary Receiver
							>1.0	Top Cooler
							0.1-0.2	Breathing zone near Top Cooler
							0.1-0.2	Decan Area
							0.1	Breathing Zone of Decan area
		3:30						

REAL TIME AIR MONITORING LOG

 PROJECT NAME Union Carbide

 LOCATION Linden, NJ

 PROJECT NO. 305281

Date	Analyst	Time	Instrument (Mfg/Model/ Serial No.)	Calibration Date & Cpd.	Compound Measured	Span Set or Sens. Cal.	Conc. (Units)	Location/Activity/Comments
						0.01		
-9	Unice Kim	12:30 PM	Bacharach MV-2	4-14-87	Mercury		mg/m ³	2nd Stage Compressor
							0.5-1.0	1st Stage Openings
							0.1-0.2	Breathing Zone
							0.5-1.0	2nd Stage Openings
							0.1-0.2	Breathing Zone
							0.5-1.0	3rd Stage Opening
							0.1-0.2	Breathing Zone
							0.5	4th Stage Openings
							0.1	Breathing Zone
							>1.0	Top Cooler Opening
							0.1-0.2	Breathing Zone
							>1.0	Pressure Receiver
							0.1-0.2	Breathing Zone
							0.5-1.0	1st Stage
		3:00 PM					0.1-0.2	Breathing Zone



REAL TIME AIR MONITORING LOG

PROJECT NAME *Union Carbide*

LOCATION Linden, New Jersey

PROJECT NO. 305281

[illegible]



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CORPORATION

REAL TIME AIR MONITORING LOG

PROJECT NAME Union Carbide

LOCATION Linden NJ

PROJECT NO. 305281

Date	Analyst	Time	Instrument (Mfg/Model/ Serial No.)	Calibration Date & Cpd.	Compound Measured	Span Set or Sens. Cal.	Conc. (Units)	Location/Activity/Comments
						0.01	ppm ³	
-10	U. Kim	2:30 ^{pm}	Packard 6.1	4-11-87	Mercury			Area 3 Compressor
							0.3	4th Stage Cooler
							0.3	3rd Stage Cooler
							0.02	Breathing zone
							0.5	Top Cooler Cooler
							0.1	Piston
							0.1	fly wheel area
							0.3	Valve openings
							0.02	Breathing zone
							0.1-0.3	Decor Area
							0.1	Breathing zone 5 ft from Compressor
							0.1-0.3	1/1
		7:00 ^{pm}						



REAL TIME AIR MONITORING LOG

PROJECT NAME Union Carbide

LOCATION Linden NJ

PROJECT NO. 305281

Water detached at this time

[illegible]



REAL TIME AIR MONITORING LOG

PROJECT NAME Union Carbide

LOCATION Linda NJ

PROJECT NO. 305281

[illegible]

REAL TIME AIR MONITORING LOG

 PROJECT NAME Union Carbide

 LOCATION Unit NJ

 PROJECT NO. 303281

Date	Analyst	Time	Instrument (Mfg/Model/ Serial No.)	Calibration Date & Cpd.	Compound Measured	Span Set or Sens. Cal.	Conc. (Units)	Location/Activity/Comments
11/6	U. Kim	2:30pm	Bacharach MIV 2	4-14-87	Mercury	0.01 0.01	100 μ m ³	Compressor for #3
							0.7	2nd Stage Cooler Opening
							0.1	exhaust
							0.05-0.12	Decontamination ^{Unit} Area
							0.05-0.05	Decontamination Work Area
							0.05-0.05	Cleaned Equip. & Part Area
							0.01-0.1	Outside between top of area
							0.02-0.6	W/ and w/o door open
							0.01	Outside Bldg Bldg



INTERNATIONAL
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CORPORATION

ANALYTICAL SERVICES

FIELD ANALYTICAL AND SAMPLING

STANDARD OPERATING PROCEDURE

TITLE:

WIPE SAMPLE COLLECTIONS

PROCEDURE NO. SHP4625-06

REVISION NO. 0

DATE 12/17/86

PAGE 1 OF 6

PREPARED BY:

REVIEWED BY:

Director, F.A.S.

Vice President, I.T.A.S.

APPROVED BY:

Quality Assurance, I.T.A.S.

Corporate Director, Q.A.

I. PURPOSE

Wipe samples are taken to assess the presence of contaminants on various types of hard surfaces. The major objectives for wipe or surface samples are:

1. To establish whether or not a contaminant is present.
2. To determine the level and extent of ^{surface} contamination.
3. To establish a database to be used for assessment of potential health risks.
4. To measure decontamination efficiencies and/or effectiveness.

II. SCOPE/APPLICATION

This procedure is applicable to the collection of wipe samples to determine contamination levels on hard surfaces such as floors, walls and equipment. Wipes are an effective means for collecting a specimen of ambient constituents deposited or settled out on surfaces as a result of some contaminant-releasing incident. Surface areas of personnel contact or those areas associated with air handling systems are highly desirable locations to sample. A thorough understanding of all factors contributing to the condition of contamination, possible sources and the intended use of the data must be taken into account in making appropriate decisions concerning sample location.

III. EQUIPMENT AND SUPPLIES

- Hexane - pesticide grade
- 4 x 4" 100% cotton sterile gauze pads individually wrapped
- wide mouth glass jar with teflon lined lid for solvent/pad reservoir
- Forceps, stainless steel
- Appropriately sized sample bottles and screw caps with teflon liners
- Custody tape - wide/narrow
- Disposable gloves (appropriate to particular situation)
- Unique pre-printed sample number label tape
- "zip-lock" bags - quart and gallon sizes
- 35 mm automatic camera with data back and color print film - extra batteries
- Aluminum foil
- Packing material - bubble wrap, styro-peanuts, vermiculite
- Masking tape
- Duct tape
- Stainless steel template
- Carpenter's square
- Metric tape measure
- Black indelible pen
- Black ball point pen
- Black felt tip pen
- Pocket calculator
- Field log book
- Chain-of-custody forms
- Request For Analysis forms
- Case for sampling equipment
- Shipping containers
- Shipping labels
- Trash bags
- Work cart or tray to work from and transport sampling equipment
- Strapping tape
- Flashlight with extra batteries
- Mobile radios, if applicable, with chargers
- Safety glasses, ear protection, etc.
- 7-x-omatic detergent
- Extension cord with GFI
- Paper towels
- 25', 100' tape measures
- Pencils

VI. PROCEDURE

- A. Sample Location: Can be selected prior to arrival on-site based on previous site visits, maps, etc., or immediately prior to collection based on observations. The following are specific goals for use of wipe sample data, which can dictate the approach used in selecting sample locations.
1. Worst-case contamination sample - determination of area of highest contamination probability.
 2. Extent of contamination sample - determination of how large an area over which the contamination has been dispersed.
 3. Post-decontamination sample - determination of any residual contamination in an area after clean-up and decontamination work.
 4. Toxicological assessment - determining if an area is safe from a public health and exposure standpoint.
- B. Wipe Area: Past experience has shown that a 2500 cm² (0.25 m²) area is appropriate for most wipe sample applications. For specific projects, the following guidelines must be addressed:
1. The actual area to be wiped is largely determined by available analytical method sensitivity for target parameters and the target concentration(s) that define allowable exposure levels.
 2. Required risk assessment data may further impact the size of wipe sample areas.
 3. If a single surface area does not provide sufficient area for sample representation, smaller areas from the same general location may be sampled and composited to form one sample for analysis.
- C. Solvent Selection
1. When sampling for particulates, the wipe efficiency is improved by saturating the pad with solvent. While solubility is not the concern in this case, the presence of moisture on the wipe encourages the particulates to cling to the gauze.

2. When the surface contaminant is in a phase other than particulate (e.g., mist, oil layer, etc.), an appropriate solvent must be used to remove the contamination. Routinely sampled contaminant/solvent combinations are listed below:

Polychlorinated Biphenyl (PCB)	Hexane, Methanol, Acetone
Tetrachlorodibenzodioxin (TCDD)	Hexane
Tetrachlorodibenzofuran (TCDF)	Hexane
Chlorinated Pesticides	Hexane, Methanol, Methylene Chloride
Phenol	Methanol, Acetone
Oils	Methylene Chloride, Carbon Tetrachloride, Hexane
Metals	Nitric Acid Solution-10% typical
Pentachlorophenol (PCP)	Methanol
¹ Known carcinogenic material. Use extreme caution. Consider alternatives.	

D. Taking The Wipe Sample

1. Prepare wipe collection pads by placing 4 x 4 inch, 100% cotton sterile gauze pads into the wide-mouth reservoir jar with gloved hands. Saturate the pads with the appropriate solvent for extraction of contaminant of interest (see Section C.2, above).

2. Begin the sampling procedure by collecting a field blank by wiping a pair of disposable gloves with a prepared gauze pad. The field blank will determine if specific analytical interferences may be present in either the sorbent pads, solvent or the gloves. This procedure is repeated at a frequency of 5% of samples collected (1 per 20 samples), or at least once for each day that samples are collected.

3. Specifically locate and measure the area to be sampled and mark it with pencil or a non-interfering tape (e.g., masking tape) or utilize a pre-measured, decontaminated template.

Each pad
is saturated
just prior
to sampling
each location.

4. Put on a new pair of gloves and press the sampling pad within the designated sample area. With straight, even strokes, draw the pad across the area, slightly overlapping each stroke. Change the wiping direction with a clean pad and repeat the pattern until confident that all of the surface contaminant has been removed.
5. As each wipe pad is used, place it in the appropriate pre-labeled sample container. When all pads for a sample have been completed, apply custody tape at the closure area of the container.
6. Prepare sample documentation per SOP # SMP4625-10, "Field Sampling Documentation". Label the sample area and take a photograph that is representative of the sample area and the location proximity, with reference points when possible.
7. The person in charge of field data should ensure the following information is accurately recorded:
 - Sample number on bottle and data sheet
 - Sample location (include floor number)
 - Sample description (e.g., wet wipe of vinyl-covered wall-board)
 - Sample date and time
 - Area sampled in square centimeters
 - Observations/problems, if pertinent
 - Names of sampling personnel
8. Upon removal of samples from site, a chain-of-custody form shall be established for the samples. The chain-of-custody will act as a transmittal form from sampling personnel to laboratory personnel and will be signed at this time to document that samples are properly relinquished and received by appropriate staff members.

V. QA/QC

- A. A wipe field blank is collected at a frequency of 5% of samples collected (1 per 20 collected) or at least daily to verify lack of interferences or cross-contamination during sample collection and handling. Collection procedure is described in Section IV, D.2.
- B. Re-wipe samples may be collected to evaluate the contaminant removal efficiency from the sampled surface. Re-wipes are collected as follows: The exact area which has just been wiped is wiped again using the same technique as for the original sample. The re-wipe pads are placed in a separate sample collection jar and analyzed as a distinct sample. The original and re-wipe results are used to determine the relative effectiveness of the original wipe in removing the contaminant from the surface.
- C. Duplicate - an area immediately adjacent to a previously sampled area is sampled using analogous techniques. ^F Note that this is not a "true" duplicate, in the sense that it is not possible to actually split a wipe sample. There is no guarantee, therefore, that wipe duplicates will or should provide comparable results. The data may be used as a general indication of the ^A homogeneity of the contamination across a particular surface.
- D. Spikes - may be ^R prepared in the field or laboratory. A standard solution of known concentration levels is injected onto prepared gauze pads and sent for analysis as a typical sample. Recovery efficiency, ^D after the handling and analysis procedures, can then be assessed.

VI. REFERENCES

- A. Sampling For Surface Contamination. Industrial Hygiene Technical Manual No. 680, May 24, 1984. U.S. Department of Labor: OSHA, p. VIII-1.
- B. Standard Operating Procedure: Wipe Sampling Technique. IT Corporation, 1984.
- C. Protocol For Heavy Equipment PCB Clean-up Verification Sampling. Field Analytical Resource Management, IT Corporation.



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DATE	3	11	88			
TIME	12	50				
PAGE	1	OF	7			
PAGE						
PROJECT NO.	305281					

SAMPLE COLLECTION LOG

PROJECT NAME Union Carbide - Linden

SAMPLE NO. D 1834 Post Clean from Compressor #3

SAMPLE LOCATION Piston WP1 Post Clean

SAMPLE TYPE Wipe Test

COMPOSITE YES ☒ NO

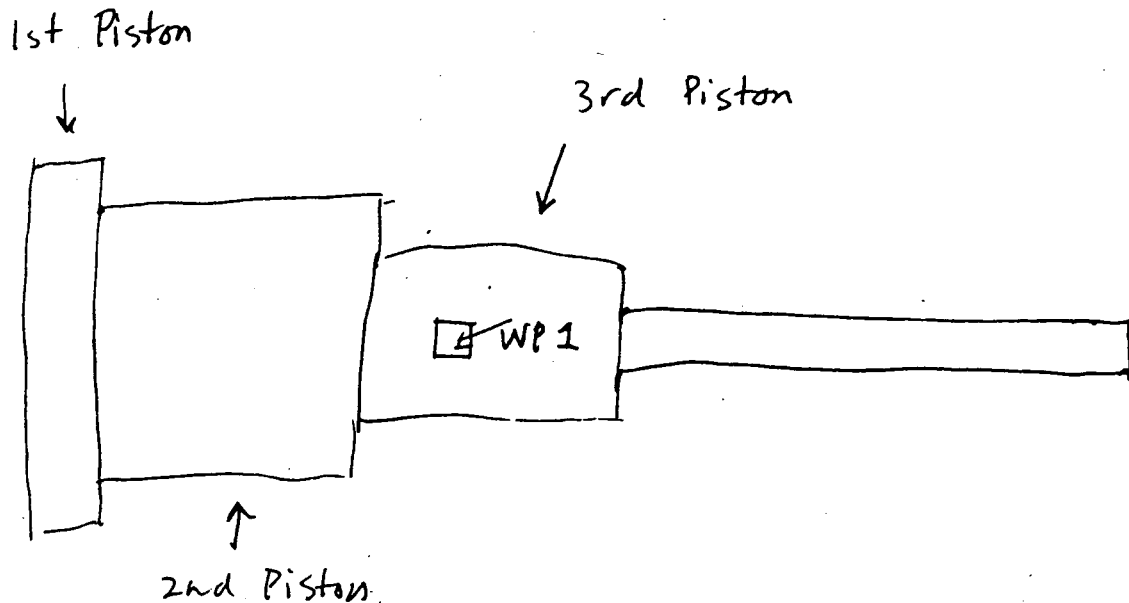
COMPOSITE TYPE _____

DEPTH OF SAMPLE _____

WEATHER _____

CONTAINERS USED	AMOUNT COLLECTED
<u>1 8oz jar</u>	<u>1 Guzzc Pan</u>

COMMENTS:



PREPARED BY: J.M. Hild



INTERNATIONAL
TECHNOLOGY
CORPORATION

DATE	5	11	88			
TIME	12	55				
PAGE	2 OF 7					
PAGE						
PROJECT NO. 305281						

SAMPLE COLLECTION LOG

PROJECT NAME Union Carbide - Linder

SAMPLE NO. D 1835 from Compressor #3

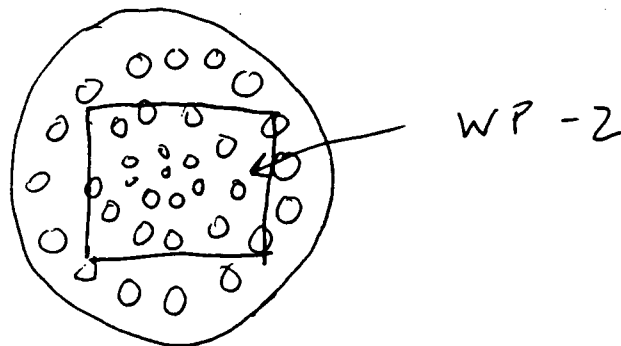
SAMPLE LOCATION 1st Stage Suction Valve WP 2 Post Clean

SAMPLE TYPE Wipe Test

COMPOSITE	CONTAINERS USED	AMOUNT COLLECTED
<u>YES</u> <input checked="" type="checkbox"/> <u>NO</u> <input type="checkbox"/>	<u>1 8oz jar</u>	<u>1 gauze Pad</u>
COMPOSITE TYPE _____		
DEPTH OF SAMPLE _____		
WEATHER _____		

COMMENTS:

1st Stage Suction Valve



PREPARED BY: _____

DATE	3	11	88		
TIME	13	10			
PAGE	3 OF 7				
PAGE					
PROJECT NO. 305281					

SAMPLE COLLECTION LOG

PROJECT NAME Union Carbide

SAMPLE NO. D 1836 from Compressor #3

SAMPLE LOCATION 1st Stage Valve Covers Post Clean (2 plates)

SAMPLE TYPE Wipe Test

COMPOSITE ☒ YES ☐ NO

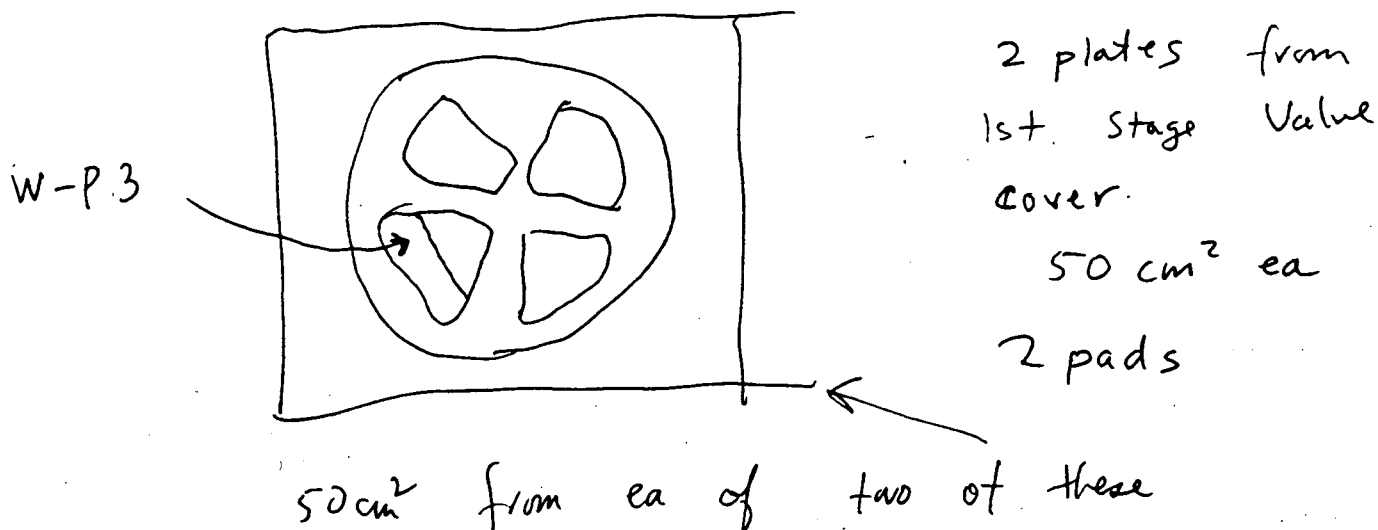
COMPOSITE TYPE _____

DEPTH OF SAMPLE _____

WEATHER _____

CONTAINERS USED	AMOUNT COLLECTED
1 Boz jar	2 pads

COMMENTS:



PREPARED BY: _____



INTERNATIONAL
TECHNOLOGY
CORPORATION

DATE	3	11	88			
TIME	13	25				
PAGE	4 OF 7					
PAGE						
PROJECT NO.	305281					

SAMPLE COLLECTION LOG

PROJECT NAME Union Carbide Linden

SAMPLE NO. D 1837 from Compressor #3

SAMPLE LOCATION 1st + ~~2nd~~ Stage Cylinder W-P4 Pre Clean

SAMPLE TYPE Wipe

COMPOSITE YES ☒ NO

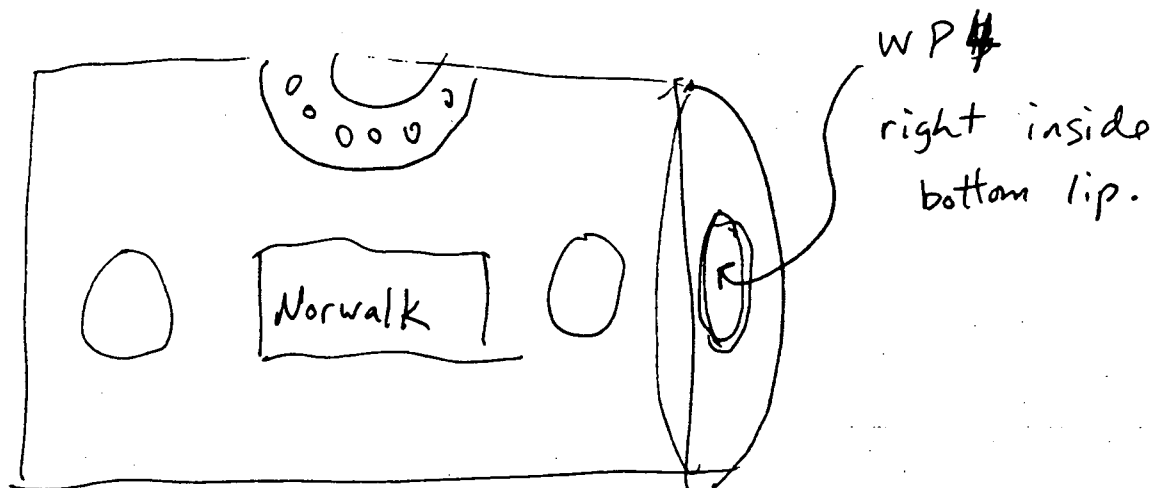
COMPOSITE TYPE _____

DEPTH OF SAMPLE _____

WEATHER _____

CONTAINERS USED	AMOUNT COLLECTED
<u>1 8oz jar</u>	<u>1 gauze pad</u>
_____	_____
_____	_____

COMMENTS:



PREPARED BY: _____



INTERNATIONAL
TECHNOLOGY
CORPORATION

DATE	3	11	88		
TIME	13	30			
PAGE	5	OF	7		
PAGE					
PROJECT NO.	305281				

SAMPLE COLLECTION LOG

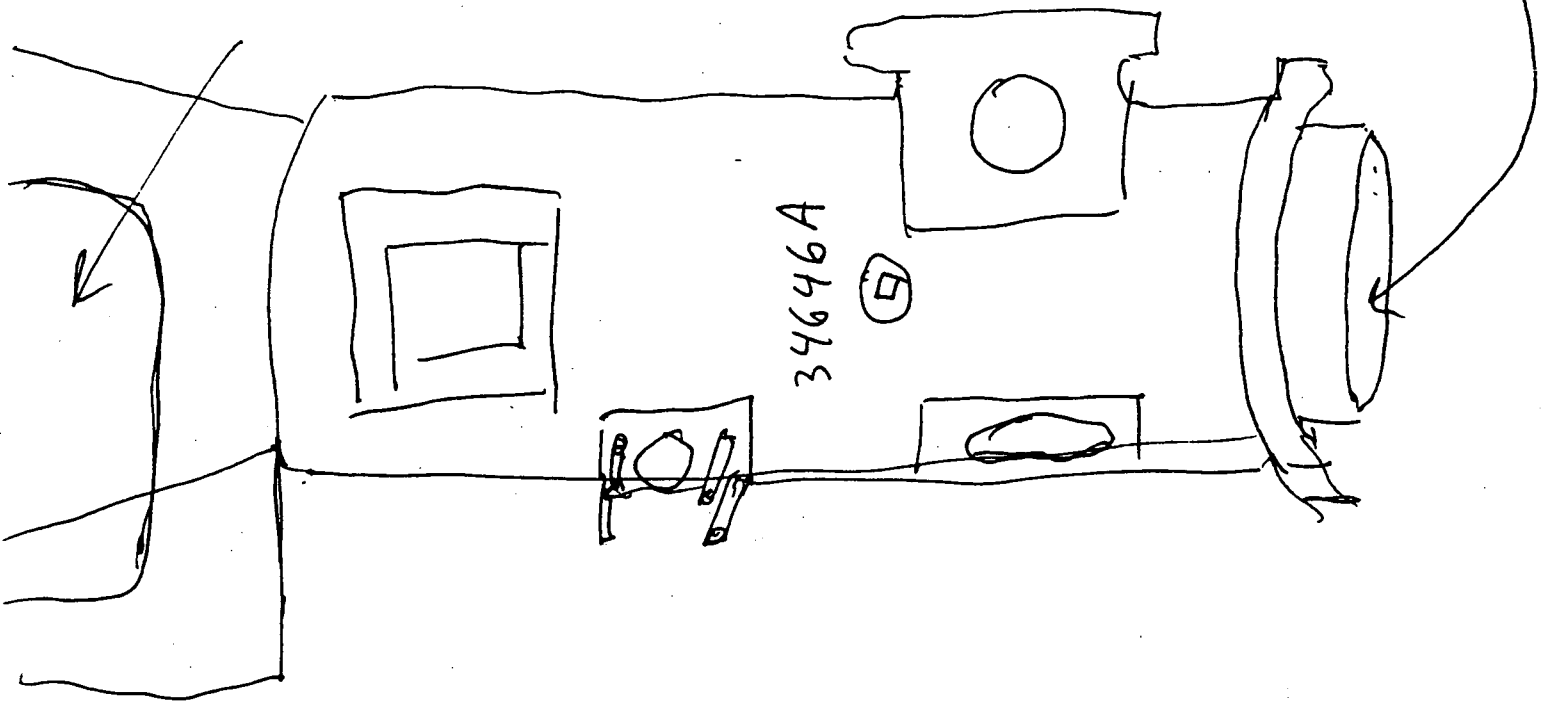
PROJECT NAME Union Carbide - Linden
SAMPLE NO. D 1838 from Compressor #3
SAMPLE LOCATION 2nd Stage Cylinder WP 5 Pre clean
SAMPLE TYPE Wipe
COMPOSITE YES ☒ NO
COMPOSITE TYPE _____
DEPTH OF SAMPLE _____
WEATHER _____

CONTAINERS USED	AMOUNT COLLECTED
<u>1 Bot jar</u>	<u>1 gauze pad</u>
_____	_____
_____	_____

COMMENTS:

WP-6

WP 5-
Just inside Lip



PREPARED BY: _____

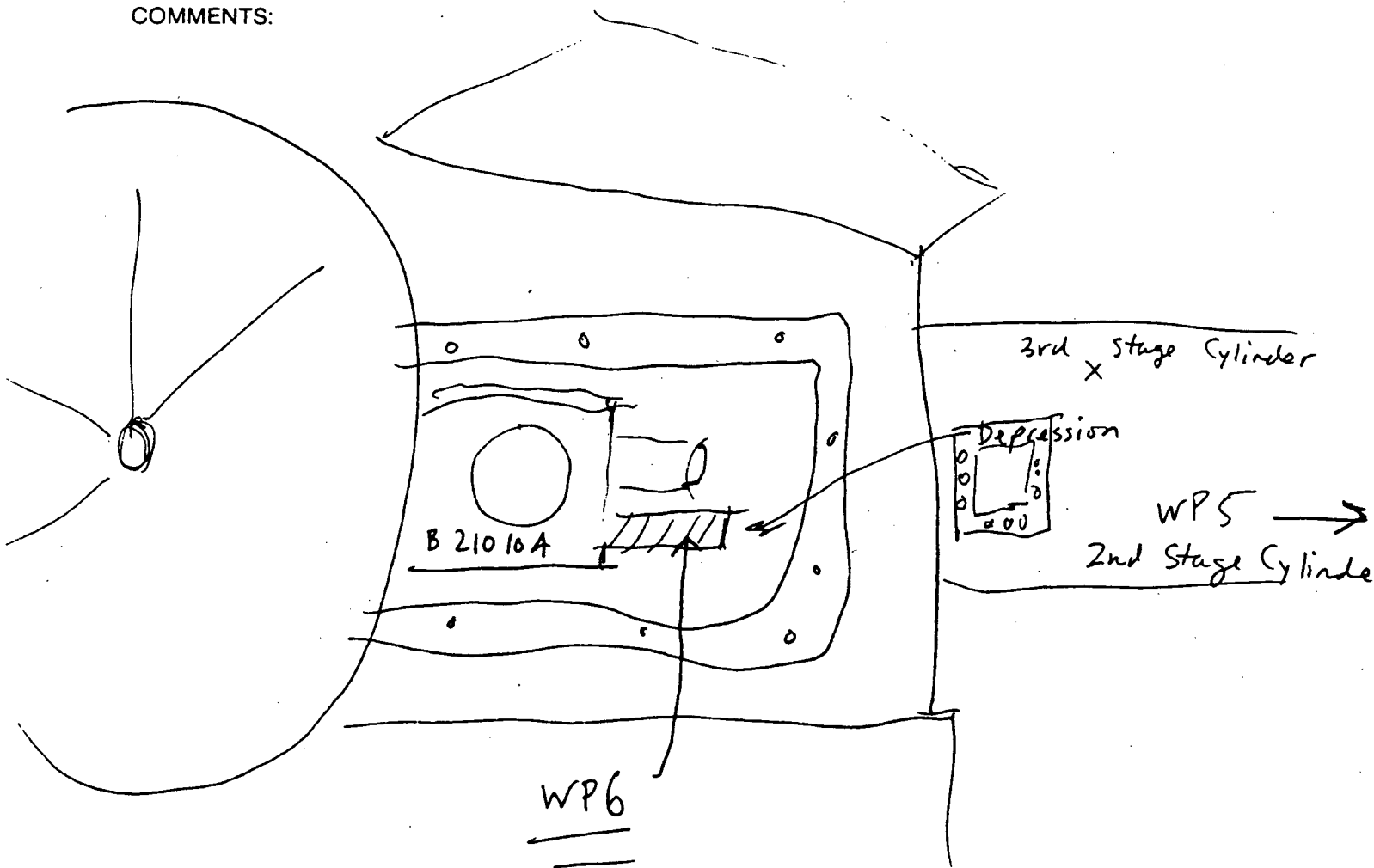
DATE	3	11	88		
TIME	13	35			
PAGE	6 OF 7				
PAGE					
PROJECT NO. 305281					

SAMPLE COLLECTION LOG

PROJECT NAME Union Carbide Linden
 SAMPLE NO. D 1839 from Compressor #3
 SAMPLE LOCATION Cross Head Wp 6 Pre Clean
 SAMPLE TYPE Wipe
 COMPOSITE YES ☒ NO
 COMPOSITE TYPE _____
 DEPTH OF SAMPLE _____
 WEATHER _____

CONTAINERS USED	AMOUNT COLLECTED
1 8oz jar	1 gauze pad

COMMENTS:



PREPARED BY: _____

DATE	3	11	88			
TIME	13	48				
PAGE	7 OF 7					
PAGE						
PROJECT NO. 305281						

SAMPLE COLLECTION LOG

PROJECT NAME Union Carbide Linden

SAMPLE NO. D 1840

SAMPLE LOCATION Field Blank

SAMPLE TYPE Wipe

COMPOSITE YES ☒ NO

COMPOSITE TYPE _____

DEPTH OF SAMPLE _____

WEATHER _____

CONTAINERS USED	AMOUNT COLLECTED
1 8oz Jar	1 pad

COMMENTS:

1 gauze pad was
moiste w/ HNO₃ from
spray bottle

PREPARED BY: _____



ANALYSIS DATA SHEET

DATE RECEIVED 3/11/98305281 6216031188 1834LOT NUMBER 6216PROJECT NAME: Union Carbide - LindenNO. OF BOTTLES: 1DESCRIPTION: Wipe Samples for Hg in 8oz glass jars PAGE 1 OF 7

RESULTS (as ppm unless specified)

☐ WET WT. ☐ DRY WT.

TEST PARAMETER	✓	RESULT	ANALYSIS DATE	INITIAL	TEST PARAMETER	✓	RESULT	ANALYSIS DATE	UNIT
Acidity (as CaCO ₃)					Aluminum (Al)				
Alkalinity (as CaCO ₃)					Antimony (Sb)				
Ammonia-N					Arsenic (As)				
BOD ₅					Barium (Ba)				
Chlorine Demand (at 15 min)					Beryllium (Be)				
Chlorine Residual					Cadmium (Cd)				
Coliform-Fecal (# col. 100ml)					Calcium (Ca)				
Coliform-Total (# col. 100ml)					Chromium (Cr)				
Color (Pt. Co. units)					Cobalt (Co)				
Cyanide (Total)					Copper (Cu)				
Dissolved Oxygen					Iron (Fe)				
Hexavalent Chromium					Lead (Pb)				
Nitrate-N					Magnesium (Mg)				
Nitrite-N					Manganese (Mn)				
Nitrogen-Kjeldahl					Mercury (Hg)	✓	0.090 mg/wipe 1/2 R		
Nitrogen-Organic					Molybdenum (Mo)				
Oil & Grease Gr. <input type="checkbox"/> IR <input type="checkbox"/>					Nickel (Ni)				
Petro. Hydrocarbon Gr. <input type="checkbox"/> IR <input type="checkbox"/>					Potassium (K)				
Phosphate-P (Ortho)					Selenium (Se)				
pH (units)					Silver (Ag)				
Phenols (Total)					Sodium (Na)				
Settleable Solids					Thallium (Tl)				
Specific Conductance (umhos)					Tin (Sn)				
Sulfite					Titanium (Ti)				
Surfactants					Vanadium (V)				
TOC					Zinc (Zn)				
TOX									
Boron					Arsenic				
Chloride					Barium				
COD					Cadmium				
Fluoride					Chromium				
Hardness (as CaCO ₃)					Lead				
Phosphate-P (Total)					Mercury				
Silica					Selenium				
Sulfate					Silver				
Sulfide					Endrin				
Total Ash					Lindane				
Total Dissolved Solids					Methoxychlor				
Total Solids					Toxaphene				
Total Suspended Solids					2,4 - D				
Total Volatile Solids					2,4,5 - TP				
Turbidity (NTU)									
Flash Point (°F)									
Heating Value (BTU)									
Organic Chloride (%)									
Organic Sulfur (%)									
Specific Gravity (g/ml)									
Viscosity (cp units)									

PROJECT MANAGER: _____

DATE RECEIVED 3/11/98

305281 62160311881036
 LOT # SAMPLE DATE SAMPLE # BOTTLE #

LOT NUMBER 6216PROJECT NAME Union Carbide - LindenNO OF BOTTLES 1DESCRIPTION Wipe Samples for Hg in 8oz glass jars PAGE 3 OF 7

RESULTS (as ppm unless specified)

☐ WET WT☐ DRY WT

TEST PARAMETER	✓	RESULT	ANALYSIS DATE	INITIAL	TEST PARAMETER	✓	RESULT	ANALYSIS DATE	INITIAL
Acidity (as CaCO ₃)					Aluminum (Al)				
Alkalinity (as CaCO ₃)					Antimony (Sb)				
Ammonia-N					Arsenic (As)				
BOD ₅					Barium (Ba)				
Chlorine Demand (at 15 min)					Beryllium (Be)				
Chlorine Residual					Cadmium (Cd)				
Coliform-Fecal (# col 100ml)					Calcium (Ca)				
Coliform-Total (# col 100ml)					Chromium (Cr)				
Color (Pt Co units)					Cobalt (Co)				
Cyanide (Total)					Copper (Cu)				
Dissolved Oxygen					Iron (Fe)				
Hexavalent Chromium					Lead (Pb)				
Nitrate-N					Magnesium (Mg)				
Nitrite-N					Manganese (Mn)				
Nitrogen-Kjeldahl					Mercury (Hg)	✓	81mg/wipe		
Nitrogen-Organic					Molybdenum (Mo)				
Oil & Grease Gr <input type="checkbox"/> IR <input type="checkbox"/>					Nickel (Ni)				
Petro. Hydrocarbon Gr <input type="checkbox"/> IR <input type="checkbox"/>					Potassium (K)				
Phosphate-P (Ortho)					Selenium (Se)				
pH (units)					Silver (Ag)				
Phenols (Total)					Sodium (Na)				
Settleable Solids					Thallium (Tl)				
Specific Conductance (umhos)					Tin (Sn)				
Sulfite					Titanium (Ti)				
Surfactants					Vanadium (V)				
TCC					Zinc (Zn)				
TOX									
Boron					Arsenic				
Chloride					Barium				
COD					Cadmium				
Fluoride					Chromium				
Hardness (as CaCO ₃)					Lead				
Phosphate-P (Total)					Mercury				
Silica					Selenium				
Sulfate					Silver				
Sulfide					Endrin				
Total Ash					Lindane				
Total Dissolved Solids					Methoxychlor				
Total Solids					Toxaphene				
Total Suspended Solids					2,4 - D				
Total Volatile Solids					2,4,5 - TP				
Turbidity (NTU)									
Flash Point (°F)									
Heating Value (BTU)									
Organic Chloride (%)									
Organic Sulfur (%)									
Specific Gravity (g/ml)									
Viscosity (cP units)									

PROJECT MANAGER: _____

ANALYSIS DATA SHEET

DATE RECEIVED 3/11/98
30528 5 6216031188 D1937
 LOT # SAMPLE DATE SAMPLE # BOTTLE #
LOT NUMBER 6216PROJECT NAME: Union Carbide - LindenNO OF BOTTLES 1DESCRIPTION: Wipe Samples for Hg in 802 glass jars PAGE 4 OF 7

RESULTS (as ppm unless specified)

☐ WET WT.☐ DRY WT.

TEST PARAMETER	✓	RESULT	ANALYSIS DATE	INITIAL	TEST PARAMETER	✓	RESULT	ANALYSIS DATE	INITIAL
Acidity (as CaCO ₃)					Aluminum (Al)				
Alkalinity (as CaCO ₃)					Antimony (Sb)				
Ammonia-N					Arsenic (As)				
BOD ₅					Barium (Ba)				
Chlorine Demand (at 15 min)					Beryllium (Be)				
Chlorine Residual					Cadmium (Cd)				
Coliform-Fecal (# col 100ml)					Calcium (Ca)				
Coliform-Total (# col 100ml)					Chromium (Cr)				
Color (Pt-Co units)					Cobalt (Co)				
Cyanide (Total)					Copper (Cu)				
Dissolved Oxygen					Iron (Fe)				
Hexavalent Chromium					Lead (Pb)				
Nitrate-N					Magnesium (Mg)				
Nitrite-N					Manganese (Mn)				
Nitrogen-Kjeldahl					Mercury (Hg)	✓	3.0 mg/wipe		
Nitrogen-Organic					Molybdenum (Mo)				
Oil & Grease Gr. <input type="checkbox"/> IR <input type="checkbox"/>					Nickel (Ni)				
Petro. Hydrocarbon Gr. <input type="checkbox"/> IR <input type="checkbox"/>					Potassium (K)				
Phosphate-P (Ortho)					Selenium (Se)				
pH (units)					Silver (Ag)				
Phenols (Total)					Sodium (Na)				
Settleable Solids					Thallium (Tl)				
Specific Conductance (umhos)					Tin (Sn)				
Sulfite					Titanium (Ti)				
Surfactants					Vanadium (V)				
TOC					Zinc (Zn)				
TOX									
Boron					Arsenic				
Chloride					Barium				
COD					Cadmium				
Fluoride					Chromium				
Hardness (as CaCO ₃)					Lead				
Phosphate-P (Total)					Mercury				
Silica					Selenium				
Sulfate					Silver				
Sulfide					Endrin				
Total Ash					Lindane				
Total Dissolved Solids					Methoxychlor				
Total Solids					Toxaphene				
Total Suspended Solids					2,4-D				
Total Volatile Solids					2,4,5-TP				
Turbidity (NTU)									
Flash Point (°F)									
Heating Value (BTU)									
Organic Chloride (%)									
Organic Sulfur (%)									
Specific Gravity (g/ml)									
Viscosity (cp units)									

PROJECT MANAGER: _____

ANALYSIS DATA SHEET

305281 6216031188101939
 LOT # SAMPLE DATE SAMPLE # BOTTLE #

DATE RECEIVED 3/11/98

LOT NUMBER 6216

PROJECT NAME Union Carbide - Linden

NO OF BOTTLES 1

DESCRIPTION Wipe Samples for Hg in 802 glass jars PAGE 5 OF 7

RESULTS (as ppm unless specified)

☐ WET WT.☐ DRY WT.

TEST PARAMETER		✓	RESULT	ANALYSIS DATE	INITIAL	TEST PARAMETER		✓	RESULT	ANALYSIS DATE	INITIAL
24-HOUR ANALYSIS	Acidity (as CaCO ₃)					METALS	Aluminum (Al)				
	Alkalinity (as CaCO ₃)						Antimony (Sb)				
	Ammonia-N						Arsenic (As)				
	BOD ₅						Barium (Ba)				
	Chlorine Demand (at 15 min)						Beryllium (Be)				
	Chlorine Residual						Cadmium (Cd)				
	Coliform-Fecal (# col. 100ml)						Calcium (Ca)				
	Coliform-Total (# col. 100ml)						Chromium (Cr)				
	Color (Pt Co. units)						Cobalt (Co)				
	Cyanide (Total)						Copper (Cu)				
	Dissolved Oxygen						Iron (Fe)				
	Hexavalent Chromium						Lead (Pb)				
	Nitrate-N						Magnesium (Mg)				
	Nitrite-N						Manganese (Mn)				
	Nitrogen-Kjeldahl						Mercury (Hg)	✓	0.068 mg/l + ipe		
	Nitrogen-Organic						Molybdenum (Mo)				
	Oil & Grease Gr. <input type="checkbox"/> IR <input type="checkbox"/>						Nickel (Ni)				
	Petro. Hydrocarbon Gr. <input type="checkbox"/> IR <input type="checkbox"/>						Potassium (K)				
	Phosphate-P (Ortho)						Selenium (Se)				
	pH (units)						Silver (Ag)				
	Phenols (Total)						Sodium (Na)				
	Settleable Solids						Thallium (Tl)				
	Specific Conductance (umhos)						Tin (Sn)				
	Sulfite						Titanium (Ti)				
Surfactants					Vanadium (V)						
TOC					Zinc (Zn)						
TOX											
WET CHEMISTRY	Boron					EP. TOXICITY	Arsenic				
	Chloride						Barium				
	COD						Cadmium				
	Fluoride						Chromium				
	Hardness (as CaCO ₃)						Lead				
	Phosphate-P (Total)						Mercury				
	Silica						Selenium				
	Sulfate						Silver				
	Sulfide						Enarim				
	Total Ash						Lindane				
	Total Dissolved Solids						Methoxychlor				
	Total Solids						Toxaphene				
	Total Suspended Solids						2,4-D				
	Total Volatile Solids						2,4,5-TP				
Turbidity (NTU)											
MISC.	Flash Point (°F)					OTHER					
	Heating Value (BTU)										
	Organic Chloride (%)										
	Organic Sulfur (%)										
	Specific Gravity (g/ml)										
	Viscosity (cp units)										

PROJECT MANAGER: _____



ANALYSIS DATA SHEET

DATE RECEIVED 3/11/38

305281 6216031188101939

LOT NUMBER 6216

PROJECT NAME Union Carbide - Linden

NO OF BOTTLES 1

DESCRIPTION: Wipe Samples for Hg in 802 glass jars PAGE 6 OF 7

RESULTS (as ppm unless specified)

☐ WET WT.☐ DRY WT.

24-HOUR ANALYSIS									
TEST PARAMETER	-	RESULT	ANALYSIS DATE	INITIAL	TEST PARAMETER	-	RESULT	ANALYSIS DATE	INITIAL
Acidity (as CaCO ₃)					Aluminum (Al)				
Alkalinity (as CaCO ₃)					Antimony (Sb)				
Ammonia-N					Arsenic (As)				
BOD ₅					Barium (Ba)				
Chlorine Demand (at 15 min)					Beryllium (Be)				
Chlorine Residual					Cadmium (Cd)				
Coliform-Fecal (# col. 100ml)					Calcium (Ca)				
Coliform-Total (# col. 100ml)					Chromium (Cr)				
Color (Pt Co units)					Cobalt (Co)				
Cyanide (Total)					Copper (Cu)				
Dissolved Oxygen					Iron (Fe)				
Hexavalent Chromium					Lead (Pb)				
Nitrate-N					Magnesium (Mg)				
Nitrite-N					Manganese (Mn)				
Nitrogen-Kjeldahl					Mercury (Hg)		0.19 mg/w.p.c.		
Nitrogen-Organic					Molybdenum (Mo)				
Oil & Grease Gr. <input type="checkbox"/> IR <input type="checkbox"/>					Nickel (Ni)				
Petro. Hydrocarbon Gr. <input type="checkbox"/> IR <input type="checkbox"/>					Potassium (K)				
Phosphate-P (Ortho)					Selenium (Se)				
pH (units)					Silver (Ag)				
Phenols (Total)					Sodium (Na)				
Settleable Solids					Thallium (Tl)				
Specific Conductance (umhos)					Tin (Sn)				
Sulfite					Titanium (Ti)				
Surfactants					Vanadium (V)				
TOC					Zinc (Zn)				
TOX									
Boron					Arsenic				
Chloride					Barium				
COD					Cadmium				
Fluoride					Chromium				
Hardness (as CaCO ₃)					Lead				
Phosphate-P (Total)					Mercury				
Silica					Selenium				
Sulfate					Silver				
Sulfide					Endrin				
Total Asn					Lindane				
Total Dissolved Solids					Methoxychlor				
Total Solids					Toxaphene				
Total Suspended Solids					2,4-D				
Total Volatile Solids					2,4,5-TP				
Turbidity (NTU)									
Flash Point (°F)									
Heating Value (BTU)									
Organic Chloride (%)									
Organic Sulfur (%)									
Specific Gravity (g/ml)									
Viscosity (cp units)									

PROJECT MANAGER:



ANALYSIS SHEET

DATE RECEIVED 3/11/88

30528; 6216031188101840

LOT NUMBER 6216

PROJECT NAME Union Carbide - Linden

NO OF BOTTLES 1

DESCRIPTION Wipe Samples for Hg in 802 glass jars PAGE 7 OF 7

RESULTS (as ppm unless specified)

☐ WET WT. ☐ DRY WT.

24-HOUR ANALYSIS									
TEST PARAMETER	✓	RESULT	ANALYSIS DATE	INITIAL	TEST PARAMETER	✓	RESULT	ANALYSIS DATE	INITIAL
Acidity (as CaCO ₃)					Aluminum (Al)				
Alkalinity (as CaCO ₃)					Antimony (Sb)				
Ammonia-N					Arsenic (As)				
BOD ₅					Barium (Ba)				
Chlorine Demand (at 15 min)					Beryllium (Be)				
Chlorine Residual					Cadmium (Cd)				
Coliform-Fecal (# col. 100ml)					Calcium (Ca)				
Coliform-Total (# col. 100ml)					Chromium (Cr)				
Color (Pt Co. units)					Cobalt (Co)				
Cyanide (Total)					Copper (Cu)				
Dissolved Oxygen					Iron (Fe)				
Hexavalent Chromium					Lead (Pb)				
Nitrate-N					Magnesium (Mg)				
Nitrite-N					Manganese (Mn)				
Nitrogen-Kjeldahl					Mercury (Hg)	✓	<0.0002 mg/wipe		
Nitrogen-Organic					Molybdenum (Mo)				
Oil & Grease Gr. <input type="checkbox"/> IR <input type="checkbox"/>					Nickel (Ni)				
Petro Hydrocarbon Gr. <input type="checkbox"/> IR <input type="checkbox"/>					Potassium (K)				
Phosphate-P (Ortho)					Selenium (Se)				
pH (units)					Silver (Ag)				
Phenols (Total)					Sodium (Na)				
Settleable Solids					Thallium (Tl)				
Specific Conductance (umhos)					Tin (Sn)				
Sulfite					Titanium (Ti)				
Surfactants					Vanadium (V)				
TOC					Zinc (Zn)				
TOX									
WET CHEMISTRY					EP. TOXICITY				
Boron					Arsenic				
Chloride					Barium				
COD					Cadmium				
Fluoride					Chromium				
Hardness (as CaCO ₃)					Lead				
Phosphate-P (Total)					Mercury				
Silica					Selenium				
Sulfate					Silver				
Sulfide					Endrin				
Total Ash					Lindane				
Total Dissolved Solids					Methoxychlor				
Total Solids					Toxaphene				
Total Suspended Solids					2,4-D				
Total Volatile Solids					2,4,5-TP				
Turbidity (NTU)									
MISC.					OTHER				
Flash Point (°F)									
Heating Value (BTU)									
Organic Chloride (%)									
Organic Sulfur (%)									
Specific Gravity (g/ml)									
Viscosity (cP units)									

PROJECT MANAGER:



CHAIN-OF-CUSTODY RECORD

R/A Control No. 63349
C/C Control No. A 76234

PROJECT NAME/NUMBER Union Carbide-Linden #305281

LAB DESTINATION Edison

SAMPLE TEAM MEMBERS Jacques Hill + Tom Daniels

CARRIER/WAYBILL NO. _____

Sample Number	Sample Location and Description	Date and Time Collected	Sample Type	Container Type	Condition on Receipt (Name and Date)	Disposal Record No.
D1834	Compressor #3 Piston PostClean Wp1	3/11/88 12:50	WIPE	1802 Jar		
D1835	Comp #3 1st Stage Section Valve PostClean	3/11/88 12:55	"	"		
D1836	Comp #3 1st Stage Valve Covers PostClean WP3	3/11/88 13:10	"	"		
D1837	Comp #3 1st Stage Cylinder PreClean WP4	3/11/88 13:25	"	"		
D1838	Comp #3 2nd Stage Cylinder PreClean WP5	3/11/88 13:30	"	"		
D1839	Comp #3 Cross Head PreClean WP6	3/11/88 13:35	"	"		
D1840	Comp #3 Field Blank WP7	3/11/88 13:48	"	"		

Special Instructions: _____

Possible Sample Hazards: Hg

SIGNATURES: (Name, Company, Date and Time)

1. Relinquished By: Jacques Hill I.T. Edison 3/11/88

3. Relinquished By: _____

Received By: Jerry Virginia 3/11/88 3:35

Received by: _____

2. Relinquished By: _____

4. Relinquished By: _____

Received By: _____

Received By: _____

REQUEST FOR ANALYSIS

R/A Control No. 63349
C/C Control No. A76234
3/11/88

PROJECT NAME Union Carbide Edr Linden
PROJECT NUMBER 305281
PROJECT MANAGER Tom Hernon
BILL TO PC 3811 Edism

DATE SAMPLES SHIPPED _____
LAB DESTINATION _____
LABORATORY CONTACT _____
SEND LAB REPORT TO _____

I.T. Edism

PURCHASE ORDER NO. _____

DATE REPORT REQUIRED _____

PROJECT CONTACT _____

PROJECT CONTACT PHONE NO. _____

Sample No	Sample Type	Sample Volume	Preservative	Requested Testing Program	Special Instructions
D1834	WIPE	1 gauze pad	NONE	Hg	RUSH 24 Hr.
D1835	WIPE	"		Hg	RUSH 24 Hr.
D1836	WIPE	2 gauze pads		Hg	Rush 24 Hr.
D1837	WIPE	1 gauze pad		Hg	RUSH 24 Hr.
D1838	WIPE	1 gauze pad		Hg	RUSH 24 Hr.
D1839	WIPE	1 gauze pad		Hg	RUSH 24 Hr.
D1840	Field Blank WPT	1 gauze pad	↓	Hg	RUSH 24 Hr.
D1840	WIPE	1 gauze pad	↓	Hg	RUSH 24 Hr.

TURNAROUND TIME REQUIRED: (Rush must be approved by the Project Manager.)

Normal _____

Rush ☒
24 Hours
(Subject to rush surcharge)

POSSIBLE HAZARD IDENTIFICATION: (Please indicate if sample(s) are hazardous materials and/or suspected to contain high levels of hazardous substances)

Nonhazardous _____

Flammable _____

Skin Irritant _____

Highly Toxic _____

Other Hg
(Please Specify)

SAMPLE DISPOSAL (Please indicate disposition of sample following analysis. Lab will charge for packing, shipping, and disposal.)

Return to Client _____

Disposal by Lab _____

FOR LAB USE ONLY

Received By _____

Date/Time _____

WHITE - Original to accompany samples

YELLOW - Field copy

DATE	3	15	88			
TIME	08	45				
PAGE	1 OF 7					
PAGE						
PROJECT NO. 305281						

SAMPLE COLLECTION LOG

PROJECT NAME Union Carbide - Linden

SAMPLE NO. D 1841 WP 8

SAMPLE LOCATION Compress-
Station # 3 First Stage Valve cover (same as sample D 1836) after 2nd Clean

SAMPLE TYPE WIPE

COMPOSITE ☒ YES ☐ NO

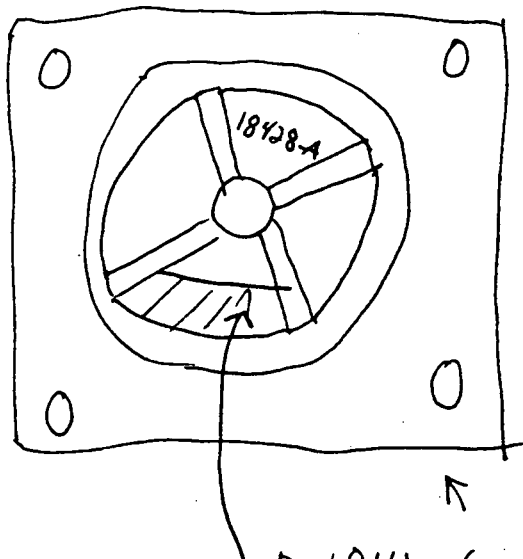
COMPOSITE TYPE _____

DEPTH OF SAMPLE _____

WEATHER _____

CONTAINERS USED	AMOUNT COLLECTED
8 oz jar	2 gauze pad

COMMENTS:



D 1841 (50 cm² from ea. of 2 of these
WP 8

PREPARED BY: _____

DATE	3	15	88			
TIME	08	55				
PAGE	2 OF 4					
PAGE						
PROJECT NO. 305291						

SAMPLE COLLECTION LOG

PROJECT NAME Union Carbide - Linden

SAMPLE NO. D 1892 Compressor #3

SAMPLE LOCATION 2nd(?) stage valve cover after 2nd cleaning WP9

SAMPLE TYPE WIPE

COMPOSITE ☒ YES ☐ NO

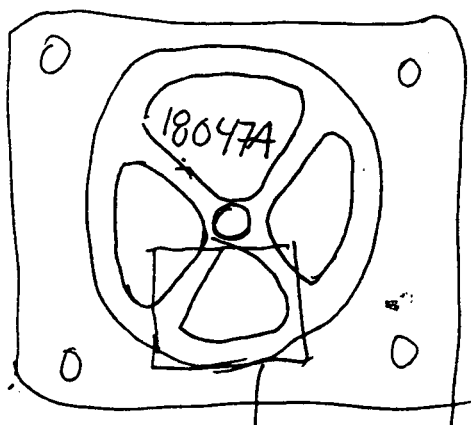
COMPOSITE TYPE _____

DEPTH OF SAMPLE _____

WEATHER _____

CONTAINERS USED	AMOUNT COLLECTED
8oz glass jar	2 gauze pads

COMMENTS:



— These are smaller
than 1st stage
covers (D1841 samples)

WP9 50cm² from ea. of 2 of these

PREPARED BY: _____

DATE	3	15	88		
TIME	09	11			
PAGE	3 OF 4				
PAGE					
PROJECT NO. 305281					

SAMPLE COLLECTION LOG

PROJECT NAME Union Carbide - Linden

SAMPLE NO. D1843 Compressor #3

SAMPLE LOCATION 4th Stage Cylinder - Post Clean WP10

SAMPLE TYPE WIPE

COMPOSITE YES ☒ NO

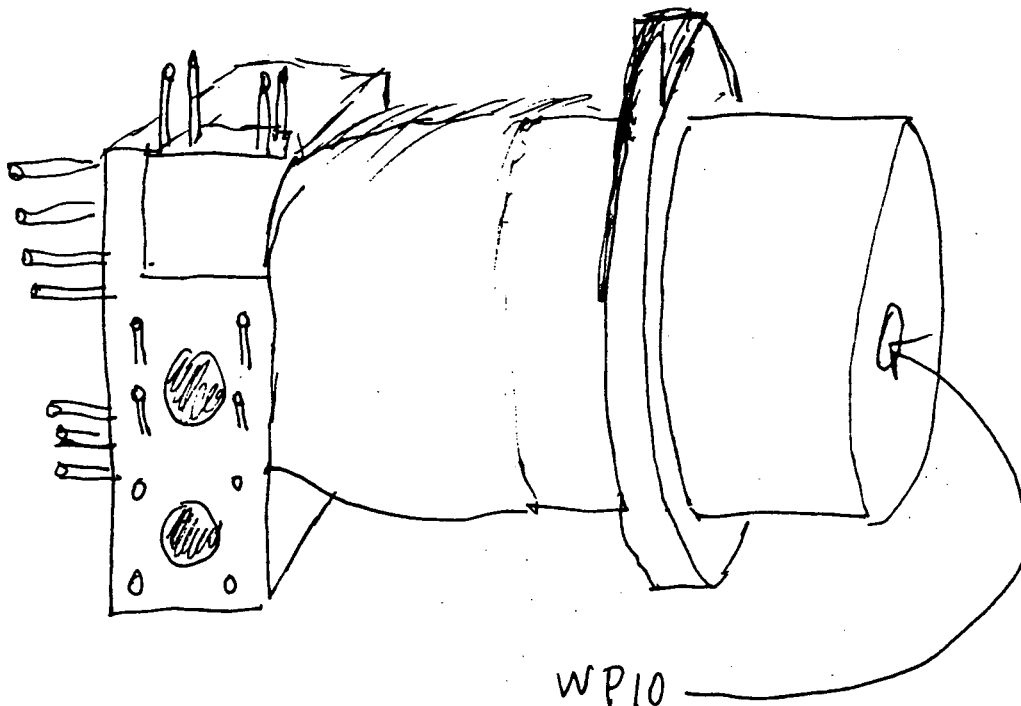
COMPOSITE TYPE _____

DEPTH OF SAMPLE _____

WEATHER _____

CONTAINERS USED	AMOUNT COLLECTED
8oz glass jar	1 gauze pad

COMMENTS:



Taken from inside lip

PREPARED BY: _____

DATE	3	15	88		
TIME	09	18			
PAGE	4 OF 4				
PAGE					
PROJECT NO. 305281					

SAMPLE COLLECTION LOG

PROJECT NAME Union Carbide - Linden

SAMPLE NO. D1844

SAMPLE LOCATION WP 11 Field Blank

SAMPLE TYPE WIPE

COMPOSITE YES ☒ NO

COMPOSITE TYPE _____

DEPTH OF SAMPLE _____

WEATHER _____

CONTAINERS USED	AMOUNT COLLECTED
8oz glass jar	1 gauze pad

COMMENTS:

1 gauze pad was moistened w/
HNO₃ from spray bottle

PREPARED BY: _____



ANALYSIS DATA SHEET

16231031588D19411
JOB # 305281 LOT # SAMPLE DATE SAMPLE # BOTTLE #

DATE RECEIVED 3/15/88

LOT NUMBER 6231

PROJECT NAME: Union Carbide - Linden

NO. OF BOTTLES: 1

DESCRIPTION: WP 8 Compressor #3 1st Stage Valve cover
after 2nd Cleaning

PAGE 1 OF 4

RESULTS (as ppm unless specified)

☐ WET WT.☐ DRY WT.

TEST PARAMETER	✓	RESULT	ANALYSIS DATE	INITIAL	TEST PARAMETER	✓	RESULT	ANALYSIS DATE	INITIAL
Acidity (as CaCO ₃)					Aluminum (Al)				
Alkalinity (as CaCO ₃)					Antimony (Sb)				
Ammonia-N					Arsenic (As)				
BOD ₅					Barium (Ba)				
Chlorine Demand (at 15 min)					Beryllium (Be)				
Chlorine Residual					Cadmium (Cd)				
Coliform-Fecal (# col./100ml)					Calcium (Ca)				
Coliform-Total (# col./100ml)					Chromium (Cr)				
Color (Pt. Co. units)					Cobalt (Co)				
Cyanide (Total)					Copper (Cu)				
Dissolved Oxygen					Iron (Fe)				
Hexavalent Chromium					Lead (Pb)				
Nitrate-N					Magnesium (Mg)				
Nitrite-N					Manganese (Mn)				
Nitrogen-Kjeldahl					Mercury (Hg)	✓	8.2 mg/w.p.e.	3/16	DN
Nitrogen-Organic					Molybdenum (Mo)				
Oil & Grease Gr <input type="checkbox"/> IR <input type="checkbox"/>					Nickel (Ni)				
Petro. Hydrocarbon Gr <input type="checkbox"/> IR <input type="checkbox"/>					Potassium (K)				
Phosphate-P (Ortho)					Selenium (Se)				
pH (units)					Silver (Ag)				
Phenols (Total)					Sodium (Na)				
Settleable Solids					Thallium (Tl)				
Specific Conductance (umhos)					Tin (Sn)				
Sulfite					Titanium (Ti)				
Surfactants					Vanadium (V)				
TOC					Zinc (Zn)				
TOX									
Boron					Arsenic				
Chloride					Barium				
COD					Cadmium				
Fluoride					Chromium				
Hardness (as CaCO ₃)					Lead				
Phosphate-P (Total)					Mercury				
Silica					Selenium				
Sulfate					Silver				
Sulfide					Endrin				
Total Ash					Lindane				
Total Dissolved Solids					Methoxychlor				
Total Solids					Toxaphene				
Total Suspended Solids					2,4 - D				
Total Volatile Solids					2,4,5 - TP				
Turbidity (NTU)									
Flash Point (°F)									
Heating Value (BTU)									
Organic Chloride (%)									
Organic Sulfur (%)									
Specific Gravity (g/ml)									
Viscosity (cp units)									

PRELIMINARY

MC 3/15
15:24

R. Ruben 3/16/88

PROJECT MANAGER:



ANALYSIS DATA SHEET

-02

DATE RECEIVED 3/15/98

JOB # 305281 LOT # 6231 SAMPLE DATE 16231031588 SAMPLE # 1 BOTTLE # 942

LOT NUMBER 6231

PROJECT NAME: Union Carbide - Linden

NO. OF BOTTLES: 1

DESCRIPTION: WP 9 2nd Stage valve cover after 2nd cleaning ^{Component #3} PAGE 2 OF 4

RESULTS (as ppm unless specified)

☐ WET WT. ☐ DRY WT.

24-HOUR ANALYSIS					METALS				
TEST PARAMETER	✓	RESULT	ANALYSIS DATE	INITIAL	TEST PARAMETER	✓	RESULT	ANALYSIS DATE	INITIAL
Acidity (as CaCO ₃)					Aluminum (Al)				
Alkalinity (as CaCO ₃)					Antimony (Sb)				
Ammonia-N					Arsenic (As)				
BOD ₅					Barium (Ba)				
Chlorine Demand (at 15 min)					Beryllium (Be)				
Chlorine Residual					Cadmium (Cd)				
Coliform-Fecal (# col. 100ml)					Calcium (Ca)				
Coliform-Total (# col. 100ml)					Chromium (Cr)				
Color (Pt-Co units)					Cobalt (Co)				
Cyanide (Total)					Copper (Cu)				
Dissolved Oxygen					Iron (Fe)				
Hexavalent Chromium					Lead (Pb)				
Nitrate-N					Magnesium (Mg)				
Nitrite-N					Manganese (Mn)				
Nitrogen-Kjeldahl					Mercury (Hg)	✓	2.0 mg/w.p.	3/16	DS
Nitrogen-Organic					Molybdenum (Mo)				
Oil & Grease Gr <input type="checkbox"/> IR <input type="checkbox"/>					Nickel (Ni)				
Petro Hydrocarbon Gr <input type="checkbox"/> IR <input type="checkbox"/>					Potassium (K)				
Phosphate-P (Ortho)					Selenium (Se)				
pH (units)					Silver (Ag)				
Phenols (Total)					Sodium (Na)				
Settleable Solids					Thallium (Tl)				
Specific Conductance (umhos)					Tin (Sn)				
Sulfite					Titanium (Ti)				
Surfactants					Vanadium (V)				
TOC					Zinc (Zn)				
TOX									
WET CHEMISTRY					EP. TOXICITY				
					Arsenic				
					Barium				
					Cadmium				
					Chromium				
					Lead				
					Mercury				
					Selenium				
					Silver				
					Endrin				
					Lindane				
					Methoxychlor				
					Toxaphene				
					2,4-D				
					2,4,5-TP				
MISC.					OTHER				

PRELIMINARY

RR 5/16/88

PROJECT MANAGER: _____



ANALYSIS DATA SHEET

03

305281 16231031588 D1943

DATE RECEIVED 3/15/88

LOT NUMBER 6231

PROJECT NAME: Union Carbide - Linden
DESCRIPTION: WPTO - 4th stage cylinder Post-Clean

NO. OF BOTTLES: 1

PAGE 3 OF 4

RESULTS (as ppm unless specified)

☐ WET WT. ☐ DRY WT.

TEST PARAMETER	✓	RESULT	ANALYSIS DATE	INITIAL	TEST PARAMETER	✓	RESULT	ANALYSIS DATE	INITIAL
Acidity (as CaCO ₃)					Aluminum (Al)				
Alkalinity (as CaCO ₃)					Antimony (Sb)				
Ammonia-N					Arsenic (As)				
BOD ₅					Barium (Ba)				
Chlorine Demand (at 15 min)					Beryllium (Be)				
Chlorine Residual					Cadmium (Cd)				
Coliform-Fecal (# col. 100ml)					Calcium (Ca)				
Coliform-Total (# col. 100ml)					Chromium (Cr)				
Color (Pt Co units)					Cobalt (Co)				
Cyanide (Total)					Copper (Cu)				
Dissolved Oxygen					Iron (Fe)				
Hexavalent Chromium					Lead (Pb)				
Nitrate-N					Magnesium (Mg)				
Nitrite-N					Manganese (Mn)				
Nitrogen-Kjeldahl					Mercury (Hg)	✓	2.2 mg/w.p.c	3/16	D.V.
Nitrogen-Organic					Molybdenum (Mo)				
Oil & Grease Gr. IR					Nickel (Ni)				
Petro. Hydrocarbon Gr. IR					Potassium (K)				
Phosphate-P (Ortho)					Selenium (Se)				
pH (units)					Silver (Ag)				
Phenols (Total)					Sodium (Na)				
Settleable Solids					Thallium (Tl)				
Specific Conductance (umhos)					Tin (Sn)				
Sulfite					Titanium (Ti)				
Surfactants					Vanadium (V)				
TOC					Zinc (Zn)				
TOX									
Boron					Arsenic				
Chloride					Barium				
COD					Cadmium				
Fluoride					Chromium				
Hardness (as CaCO ₃)					Lead				
Phosphate-P (Total)					Mercury				
Silica					Selenium				
Sulfate					Silver				
Sulfide					Endrin				
Total Ash					Lindane				
Total Dissolved Solids					Methoxychlor				
Total Solids					Toxaphene				
Total Suspended Solids					2,4 - D				
Total Volatile Solids					2,4,5 - TP				
Turbidity (NTU)									
Flash Point (°F)									
Heating Value (BTU)									
Organic Chloride (%)									
Organic Sulfur (%)									
Specific Gravity (g/ml)									
Viscosity (cp units)									

PRELIMINARY

PROJECT MANAGER: RR 3/16/88



ANALYSIS DATA SHEET

-04

305281 LOT # 62311031588 SAMPLE DATE 11/9/44 SAMPLE # BOTTLE #

DATE RECEIVED 3/15/88

LOT NUMBER 6231

PROJECT NAME Union Carbide - Linden

NO. OF BOTTLES: 1

DESCRIPTION Well Field Blank

PAGE 4 OF 4

RESULTS (as ppm unless specified)

☐ WET WT. ☐ DRY WT.

TEST PARAMETER	✓	RESULT	ANALYSIS DATE	INITIAL	TEST PARAMETER	✓	RESULT	ANALYSIS DATE	INITIAL
Acidity (as CaCO ₃)					Aluminum (Al)				
Alkalinity (as CaCO ₃)					Antimony (Sb)				
Ammonia-N					Arsenic (As)				
BOD ₅					Barium (Ba)				
Chlorine Demand (at 15 min)					Beryllium (Be)				
Chlorine Residual					Cadmium (Cd)				
Coliform-Fecal (# col. 100ml)					Calcium (Ca)				
Coliform-Total (# col. 100ml)					Chromium (Cr)				
Color (Pt. Co. units)					Cobalt (Co)				
Cyanide (Total)					Copper (Cu)				
Dissolved Oxygen					Iron (Fe)				
Hexavalent Chromium					Lead (Pb)				
Nitrate-N					Magnesium (Mg)				
Nitrite-N					Manganese (Mn)				
Nitrogen-Kjeldahl					Mercury (Hg)		0.0004 mg/l	3/16	DR
Nitrogen-Organic					Molybdenum (Mo)				
Oil & Grease Gr. <input type="checkbox"/> IR <input type="checkbox"/>					Nickel (Ni)				
Petro Hydrocarbon Gr. <input type="checkbox"/> IR <input type="checkbox"/>					Potassium (K)				
Phosphate-P (Ortho)					Selenium (Se)				
pH (units)					Silver (Ag)				
Phenols (Total)					Sodium (Na)				
Settleable Solids					Thallium (Tl)				
Specific Conductance (umhos)					Tin (Sn)				
Sulfite					Titanium (Ti)				
Surfactants					Vanadium (V)				
TOC					Zinc (Zn)				
TOX									
Boron					Arsenic				
Chloride					Barium				
COD					Cadmium				
Fluoride					Chromium				
Hardness (as CaCO ₃)					Lead				
Phosphate-P (Total)					Mercury				
Silica					Selenium				
Sulfate					Silver				
Sulfide					Endrin				
Total Ash					Lindane				
Total Dissolved Solids					Methoxychlor				
Total Solids					Toxaphene				
Total Suspended Solids					2,4 - D				
Total Volatile Solids					2,4,5 - TP				
Turbidity (NTU)									
Flash Point (°F)									
Heating value (BTU)									
Organic Chloride (%)									
Organic Sulfur (%)									
Specific Gravity (g/ml)									
Viscosity (cp units)									

PRELIMINARY

PROJECT MANAGER:



INTERNATIONAL
TECHNOLOGY
CORPORATION

REQUEST FOR ANALYSIS

R/A Control No. 63350
C/C Control No. A 10321

PROJECT NAME Union Carbide Windsor
PROJECT NUMBER 305231
PROJECT MANAGER Tom Hannon
BILL TO PC 3811 Edison

DATE SAMPLES SHIPPED 4/10/88
LAB DESTINATION I. T. Edison
LABORATORY CONTACT _____
SEND LAB REPORT TO _____

PURCHASE ORDER NO. _____

DATE REPORT REQUIRED _____
PROJECT CONTACT _____
PROJECT CONTACT PHONE NO. _____

Sample No.	Sample Type	Sample Volume	Preservative	Requested Testing Program	Special Instructions
D 1841	WIPE	2 gauze pad		Hg	Rush 24 hr
D 1842	WIPE	2 gauze pad		Hg	Rush 24 hr
D 1843	WIPE	1 gauze pad		Hg	Rush 24 hr
D 1844	WIPE	1 gauze pad		Hg	Rush 24 hr

TURNAROUND TIME REQUIRED: (Rush must be approved by the Project Manager.)
Normal _____ Rush X (Subject to rush surcharge) 24 Hour Turnover

POSSIBLE HAZARD IDENTIFICATION: (Please indicate if sample(s) are hazardous materials and/or suspected to contain high levels of hazardous substances.)
Nonhazard _____ Flammable _____ Skin Irritant _____ Highly Toxic _____ Other Hg (Please Specify)

SAMPLE DISPOSAL: (Please indicate disposition of sample following analysis. Lab will charge for packing, shipping, and disposal.)
Return to Client _____ Disposal by Lab _____

FOR LAB USE ONLY
Received By _____ Date/Time _____

WHITE - Original, to accompany samples
YELLOW - Field copy



**INTERNATIONAL
TECHNOLOGY
CORPORATION**

CHAIN-OF-CUSTODY RECORD

R/A Control No. 62350

C/C Control No. **A 76321**

PROJECT NAME/NUMBER Union Carbide - Linden 305281

LAB DESTINATION J.T. Edison

SAMPLE TEAM MEMBERS J. G. Hill

CARRIER/WAYBILL NO. _____

Sample Number	Sample Location and Description	Date and Time Collected	Sample Type	Container Type	Condition on Receipt (Name and Date)	Disposal Record No.
D1341	^{Compressor} WP 8 3-1st Stage Valve Cover clean	3/15/88 0845	WIPE	Bot glass jar		
D1342	^{Compressor} WP 9 2-2nd Stage Valve Cover clean	3/15/88 0855	WIPE	"		
D1343	^{Compressor} WP 10 3-4th Stage Cylinder ^{Post} clean	3/15/88 0911	WIPE	"		
D1344	WP 11 Field Blank	3/15/88 0918	WIPE	"		

Special Instructions: Rush 24 hr.

Possible Sample Hazards: Hg

SIGNATURES: (Name, Company, Date and Time)

1. Relinquished By: J. G. Hill

Received By: J. G. Hill 3/15/88 11:45

2. Relinquished By: _____

Received By: _____

3. Relinquished By: _____

Received by: _____

4. Relinquished By: _____

Received By: _____



INTERNATIONAL
TECHNOLOGY
CORPORATION



DATE	3	18	88			
TIME	13	15				
PAGE	1	OF				
PAGE						
PROJECT NO.	305281					

SAMPLE COLLECTION LOG

PROJECT NAME Union Carbide - Linden

SAMPLE NO. D1845 WP 12

SAMPLE LOCATION Compress. #3, Small inner cooler - Post Clean Inside

SAMPLE TYPE WIPE

COMPOSITE YES ☒ NO

COMPOSITE TYPE _____

DEPTH OF SAMPLE _____

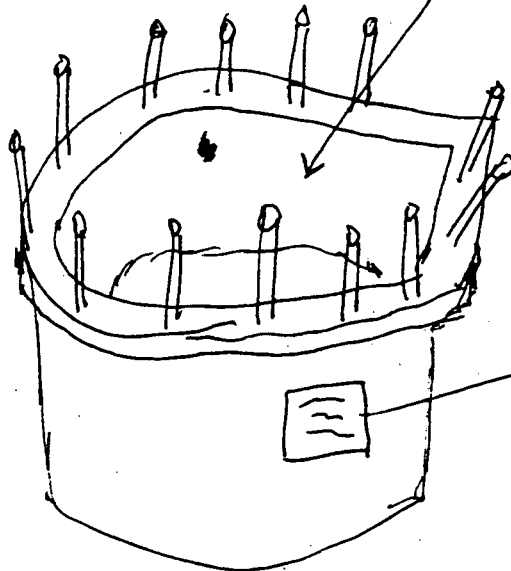
WEATHER _____

CONTAINERS USED	AMOUNT COLLECTED
8oz glass jar	1 gauze pad

COMMENTS:

There are

WP 12 - 1st Sample
Taken on this
piece.
Taken on side wall
inside.



Serial # 50495-1

~ 2"

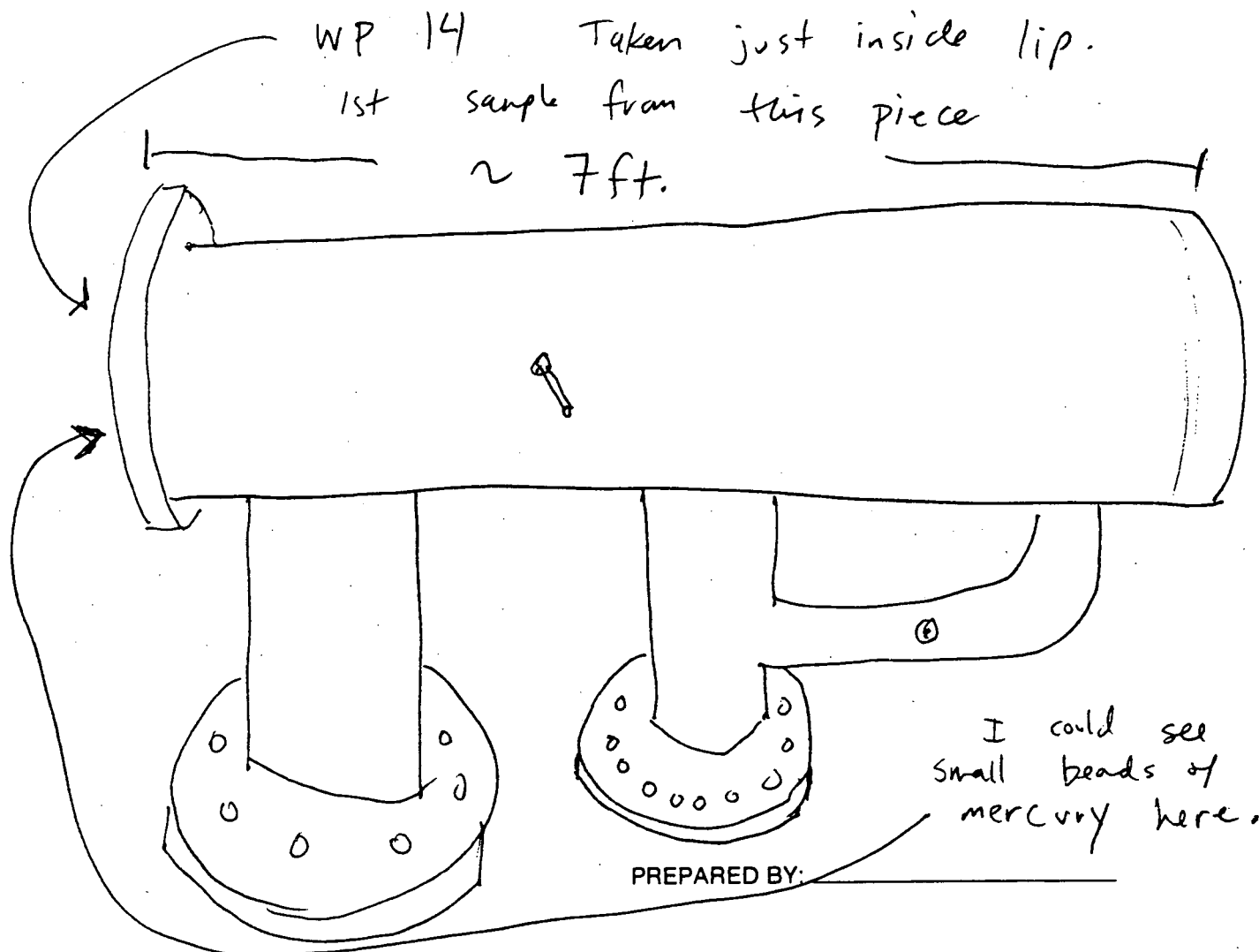
PREPARED BY: _____

SAMPLE COLLECTION LOG

PROJECT NAME Union Carbide - Linden
 SAMPLE NO. D 1847 WP14
 SAMPLE LOCATION Compressor #3 Upper Heat Exchanger Post Clean Inside
 SAMPLE TYPE WIPE
 COMPOSITE YES ☒ NO
 COMPOSITE TYPE _____
 DEPTH OF SAMPLE _____
 WEATHER _____

CONTAINERS USED	AMOUNT COLLECTED
8oz glass jar	1 gauze pad

COMMENTS:



DATE	3	18	88		
TIME	13	30			
PAGE	3 OF				
PAGE					
PROJECT NO. 305281					

SAMPLE COLLECTION LOG

PROJECT NAME Union Carbide - Linden

SAMPLE NO. D 1846 WP-13

SAMPLE LOCATION Compress #3 Lower Heat Exchanger Post Clean Inside

SAMPLE TYPE WIPE

COMPOSITE YES ☒ NO

COMPOSITE TYPE _____

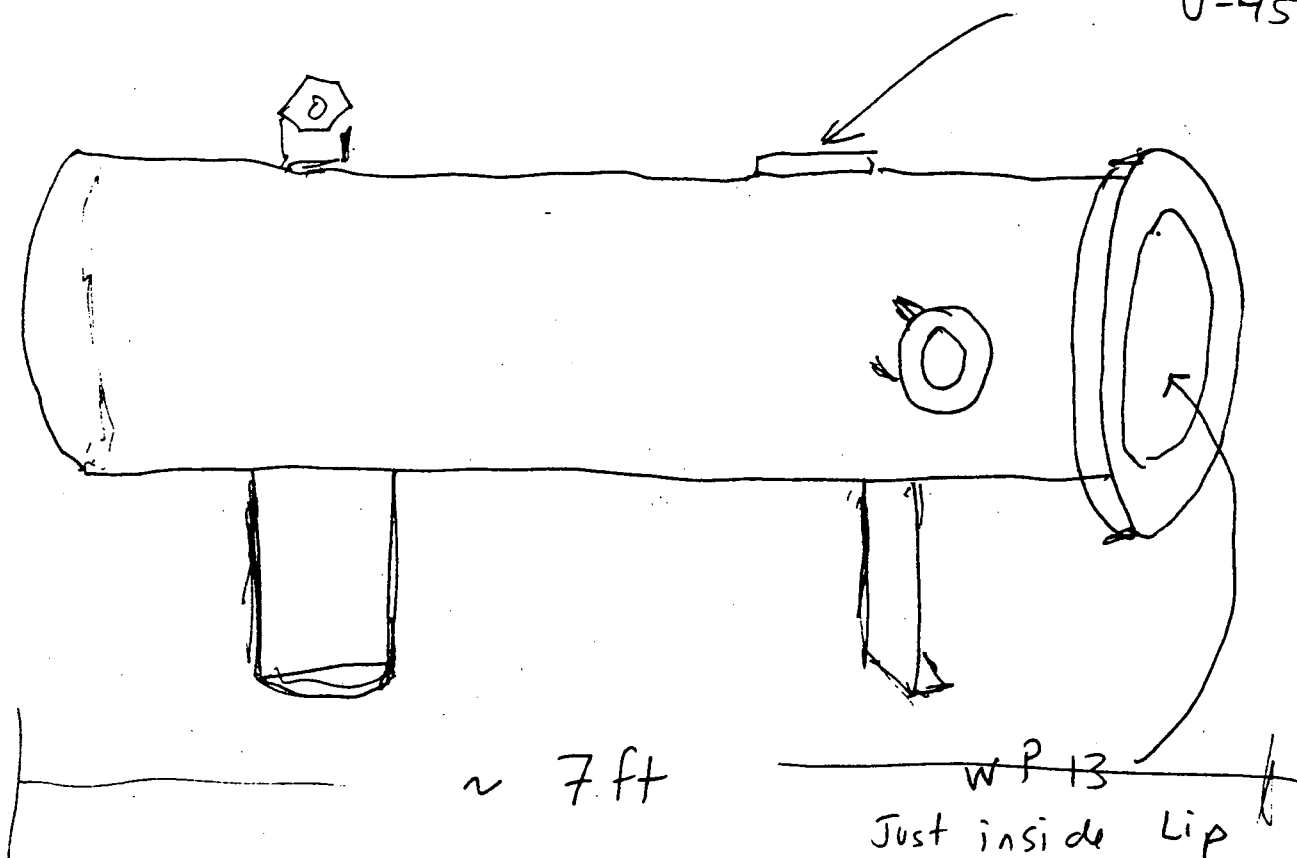
DEPTH OF SAMPLE _____

WEATHER _____

CONTAINERS USED	AMOUNT COLLECTED
8oz glass jar	1 gauze pad

COMMENTS:

1st Sample taken on this piece Serial # U-451



PREPARED BY: _____

DATE	3	18	88			
TIME	14	05				
PAGE	OF					
PAGE						
PROJECT NO. 305281						

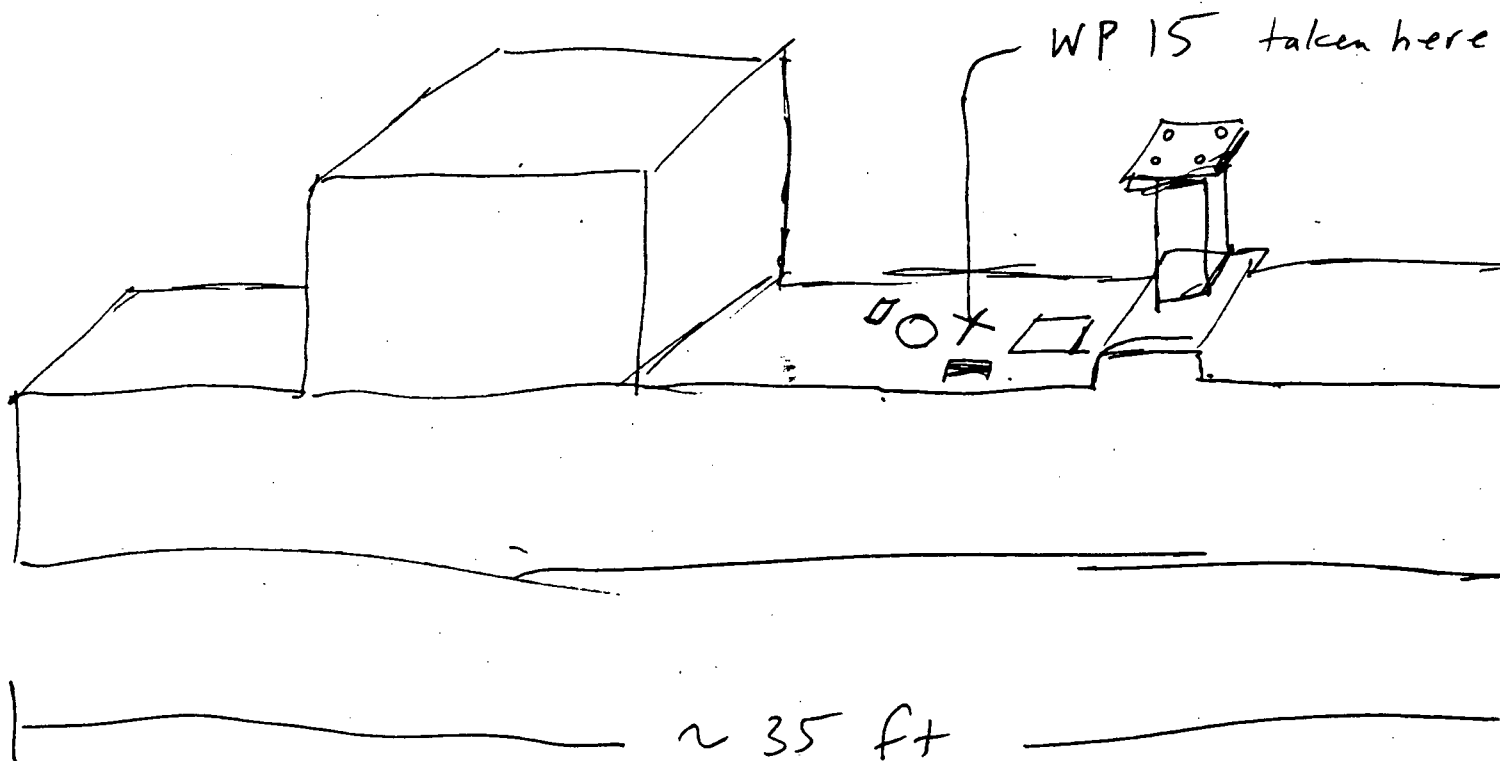
SAMPLE COLLECTION LOG

PROJECT NAME Unim Carbide - Linden
 SAMPLE NO. D1848 WP 15
 SAMPLE LOCATION Compress. # 3, Plat form, Post Clean, may have degreaser on;
 SAMPLE TYPE _____
 COMPOSITE YES NO
 COMPOSITE TYPE _____
 DEPTH OF SAMPLE _____
 WEATHER _____

CONTAINERS USED	AMOUNT COLLECTED
8oz glass jar	gawze pad

COMMENTS:

Drawing not to scale
 1st sample taken here.



PREPARED BY: _____

DATE	3	18	88		
TIME	14	15			
PAGE	OF				
PAGE					
PROJECT NO. 305281					

SAMPLE COLLECTION LOG

PROJECT NAME Union Carbide - Linden

SAMPLE NO. D1849 WP16 Cylinder

SAMPLE LOCATION Com press #3 4th Stage ~~Before~~ Post Clean

SAMPLE TYPE WIPF

COMPOSITE YES ☒ NO

COMPOSITE TYPE _____

DEPTH OF SAMPLE _____

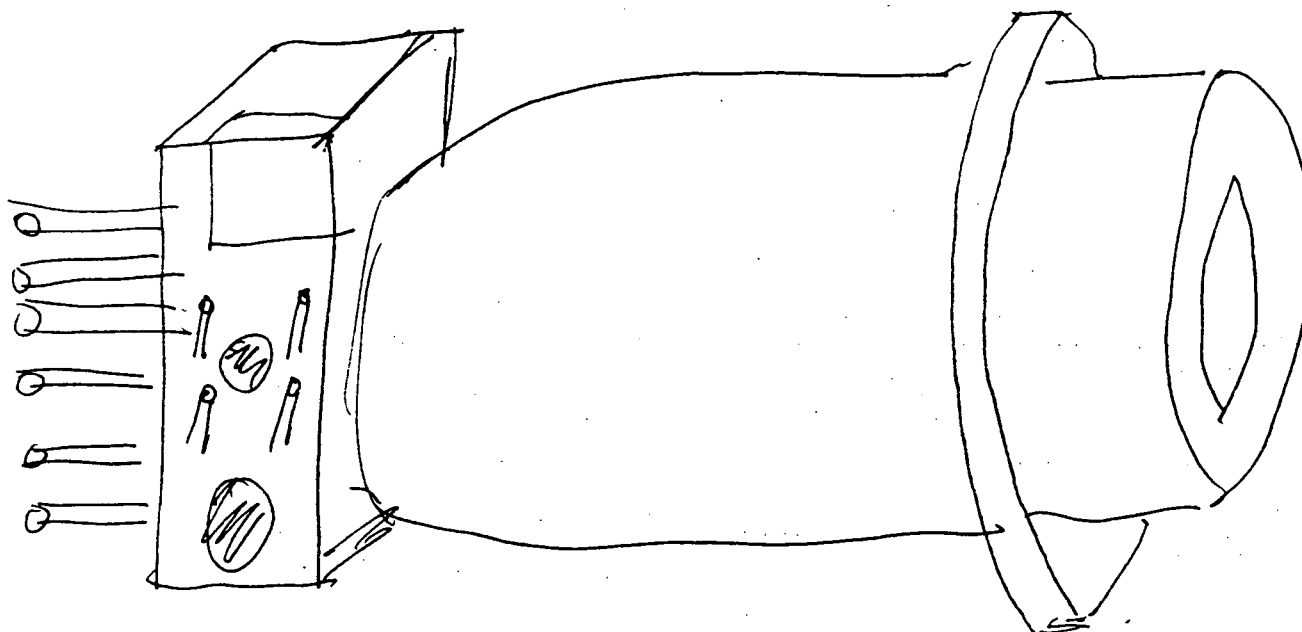
WEATHER _____

CONTAINERS USED	AMOUNT COLLECTED
<u>8oz glass jar</u>	<u>garze pad.</u>
_____	_____
_____	_____

COMMENTS:

2nd Sample taken on this piece.

1st time sampled ID was D 1843,



PREPARED BY: _____

DATE	3	18	88		
TIME	14	20			
PAGE	OF				
PAGE					
PROJECT NO. 305281					

SAMPLE COLLECTION LOG

PROJECT NAME Union Carbide - Linden

SAMPLE NO. D 1950 WP 17

SAMPLE LOCATION ~~Compress #3~~ Field Blank

SAMPLE TYPE WIPE

COMPOSITE YES ☒ NO

COMPOSITE TYPE _____

DEPTH OF SAMPLE _____

WEATHER _____

CONTAINERS USED	AMOUNT COLLECTED
80 ± glass jar	1 gauze pad

COMMENTS:

Field Blank - 1 gauze pad was
moistened ~~sprayed~~ w/ 10% HNO₃
from spray bottle.

WP 16

PREPARED BY: _____



RECEIVED

UNION CARBIDE CORPORATION

39 OLD RIDGEBURY ROAD, DANBURY, CT 06817-0001

PURCHASING DEPARTMENT

UNION CARBIDE CORP.
SOMERSET REGION OFFICE
SOMERSET, MA

JAN 27 1988

N.A. DiFranco

January 25, 1988

I.T. Corporation
165 Fieldcrest Avenue
P.O. Box 7809
Edison, N.J. 08818-7809

Attn: Linda Webb

Dear Linda,

Two copies of the signed release agreement covering the subject work are enclosed for execution by I.T. Corp. Please ensure that the copy which is stamped "UNION CARBIDE File Copy" is returned to me. We cannot pay your invoices until that copy is received and entered into our accounting system. Please note also that the address to which I.T.'s invoices are to be directed is provided in the release agreement.

Thank you for your courteous assistance in implementing this project. If you have any questions of a commercial nature, do not hesitate to contact me.

Very truly yours,

UNION CARBIDE CORP.

Don Mueller

D.H. Mueller
Purchasing Agent

cc	Scott Hicke	-	Moorestown
	John Crane	-	Newark Linde Plant
	Randy O'Neal	-	Moorestown
	Nick DiFranco	-	Somerset - 828

Exhibit A
Waste Disposal Contract No. 100-29051
Release Agreement No 0511 - 833352-905W
Page 1 of 3

A. DELIVERY LOCATION:

UNION CARBIDE'S Linde Division Facility located on Union Carbide Property on South Wood Avenue in Linden, New Jersey (07036).

Facility EPA ID No. is NJD 011 392 735

B. MATERIALS

The Materials consist of soil adjacent to a concrete OIL-STORAGE pad, which soil is contaminated with compressor oil and traces of mercury, as further described on Envirosafe Services of Ohio (hereinafter called "Disposal Subcontractor") form entitled "Application for Acceptance of Waste Product" which is attached to and hereby made a part of this EXHIBIT "A", plus approximately 85 empty 55-gallon steel drums contaminated with waste oil and minor amounts of debris (rags, etc.). Said empty drums and debris shall be characterized in detail on Disposal Subcontractor's forms as part of the Work hereof, which forms, when completed, shall become a part of this EXHIBIT "A".

C. WORK

Contractor shall:

1. Characterize the drum portion of the Materials on Disposal Subcontractor's "Application for Acceptance of Waste Product" forms for review and signature by Engineer (hereinafter named).
2. Crust empty drums and deposit into approximately sized sealed-gate roll-off container.
3. Excavate the soil portion of the Materials which is bounded by a perimeter which is one foot in excess of the area of visible oil contamination, to a depth of 3" below the level of visible contamination, or 1" below the surface level of red clay soil, whichever depth is reached first, or such other depth as may be directed by Engineer. Contractor shall advise Engineer as to its professional opinion of the minimum amount of excavation necessary to remove said contaminated soil.
4. Deposit the soil portion of the Materials in "roll-off" container(s) provided by Contractor.
5. Securely cover all such containers utilized to prevent escape of the soil portion of the Materials into the environment, and maintain the integrity of such covering until such containers arrive at the disposal location, which is specified in Section "D" of this EXHIBIT "A".

Exhibit A
Waste Disposal Contract No 100-29051
Release Agreement No 0511-833352
IT Corp/Linde-Linden, NJ
Page 2 of 3

6. Backfill areas of excavation using clean 1.5" crushed quarry stone fill material.

7. Conduct analyses necessary to characterize the Materials to the extent necessary to secure acceptance of the Materials at the Disposal Location. It is recognized that the number of samples analysed and the degree of analysis required for each sample will depend on the requirements stipulated by the Disposal Facility. However, Contractor shall put forth best efforts to minimize the amount of analysis required, and shall perform such analyses only after advising Engineer of the estimated cost of all such analyses and securing Engineer's approval for such portion of the Work.

8. Arrange for and secure acceptance of the Materials at the Disposal Location.

9. Transport Materials to the Disposal Location. Containers and transportation are to be provided by American Industrial Marine Services of Plainfield, New Jersey (EPS ID No. NJD 981 873 664), a subcontractor of Contractor.

10. Dispose of the Materials at the Disposal Location via land burial.

Except as otherwise provided in this release agreement, Contractor shall provide and furnish, in connection with its performance of the Work, all personnel and services and all materials, equipment and other things which are required for its performance of the Work. The Work shall be performed and completed to the satisfaction of Engineer.

D. DISPOSAL LOCATION

The Materials are to land-buried at the following secure landfill facility, which is operated by Envirosafe Services, Inc., a subcontractor of Contractor (sometimes referred to herein as "Disposal Subcontractor"):

Fondessy Enterprises, Inc.
876 Otter Creek Road
Oregon, Ohio

EPA ID No. OHD 045 243 706

Exhibit A
Waste Disposal Contract No 100-29051
Release Agreement No 0511-833352
IT Corp/Linde-Linden, NJ
Page 3 of 3

E. QUANTITY

Quantity of the soil portion of the Materials is estimated to be 30 to 40 cubic yards. The exact amount will be determined in the course of the performance of the work.


F. ORDERING PROCEDURES AND SCHEDULES

Contractor shall prepare and promptly submit to Engineer a detailed schedule of the various portions of the work, in form satisfactory to engineer, and shall keep such schedule current with the progress of the Work.

UNION CARBIDE hereby designates Scott Hickes as Engineer. Engineer is hereby given authority to give approvals and to take action to the extent necessary for the orderly and expeditious prosecution of the Work, but Engineer shall not have authority to amend, modify, or terminate the Contract.

Contractor hereby designates Adrian Gill as its duly authorized representative with respect to this Release Agreement. Contractor shall not change its representative without the written agreement of UNION CARBIDE.

UNION CARBIDE CORP.

By 
D.H. Mueller

Title: Purchasing Agent

Agreed to and accepted this _____ day of _____, 1988

I.T. CORPORATION
(Contractor)

By _____

Title _____

Exhibit B
Waste Disposal Contract No 100-29051
Release Agreement No 0511-833352905W
IT Corp./Linde-Linden, NJ
Page 1 of 2

A. QUANTITY MEASUREMENT

Contractor shall estimate the number of cubic yards of materials excavated at the Delivery Location, based on percentage of known volume of the containers occupied by such materials following deposition at the Delivery Location. Such estimate shall be reviewed by Engineer and the agreed-upon volume shall be recorded on the Shipping Manifest(s) which accompany the materials to the Disposal Location.

The volume of excavated materials shall be converted to tons based on a density of 2200 lbs. per cubic yard as indicated on the Disposal Sub-contractor's waste product form, unless another density is demonstrated by Contractor to Engineer.

The quantity of fill material shall be measured in tons, and confirmed by weight tickets or suppliers receipts, to the satisfaction of Engineer.

B. CONTRACT PRICE

UNION CARBIDE shall pay to Contractor for the performance of the Work the sum of the amounts established as follows:

1. The fixed amount of \$7,350.00 for excavation of the Materials, crushing and staging of drums, and backfill and repair of excavated volume. In the event that the quantity of Materials excavated exceeds 30 tons, the price for excavation shall be increased by \$85.00 for each ton in excess of 30.

2. An amount for the crushed stone fill material determined at the rate of \$17.50 per ton.

3. An amount for analyses of the Materials, determined at a rate ranging from \$600.00 to \$900.00 per sample (the estimated cost of which has been approved in advance by Engineer).

4. An amount for spotting of the roll-off containers and transportation of the Materials to the Disposal Location, determined at the rate of \$2,058.00 per load consisting of one filled roll-off rate of \$8.00 per day. In the event containers are required to remain at the Delivery Location for more than one month, Contractor shall endeavor to secure a lower monthly rate from its transportation subcontractor.

Exhibit B
Waste Disposal Contract No 100-29051
Release Agreement No 0511-833352
It Corp./Linde-Linden, NJ
Page 2 of 2

5. An amount for disposal of the Materials determined at the rate of \$136.00 per ton of materials delivered to and deposited at the Disposal Location. Portions of the Materials which weigh less than one ton per cubic yard may be charged at the rate of \$136.00 per cubic yard.

6 In the event that Contractor is requested by engineer to delay back-filling of the excavated area, and such delay requires Contractor to idle its on-site labor and equipment, an amount determined at the rate of \$100.00 for each hour of such delay.

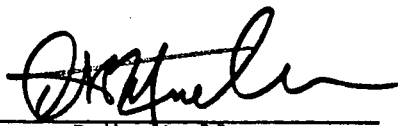
All applicable Federal, State and local taxes are included in the contract price so determined.

C. INVOICING INSTRUCTIONS.

Invoices for work performed hereunder shall reference both the Contract and Release Agreement, and shall be submitted with copies of applicable Shipping Manifests and documentation of ALL QUANTITIES FOR WHICH CONTRACTOR IS REQUESTING REIMBURSEMENT ON A UNIT PRICE BASIS to:

UNION CARBIDE CORPORATION
Invoice Auditing Dept./HWDS Auditor
P.O. Box 8690
South Charleston, WV 25303

UNION CARBIDE CORP.

By 
D.H. Mueller

1211g

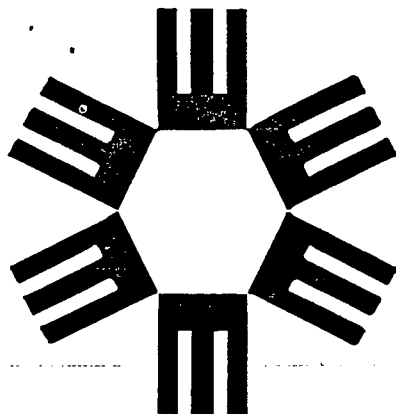
Title: Purchasing Agent

Agreed to and accepted this _____ day of _____, 1988

I.T. CORPORATION
(Contractor)

By _____

Title _____



ENVIROSAFE SERVICES OF OHIO, INC.
876 OTTER CREEK RD. P.O. BOX 167571
OREGON, OHIO 43616-7571

Application for Acceptance of Waste Product

TELEPHONE (24 HOURS) 419-726-1521
TOLL FREE (INSIDE OHIO) 800-472-0414
TOLL FREE (OUTSIDE OHIO) 800-537-0426
U.S. EPA I.D. Number OHD045243706

RECEIVED

JAN 21 1988

SECTION A - GENERATOR DATA

- Generator UNION CARBIDE CORP - LINDE DIV.
Address SOUTH WOOD AVENUE
City/State LINDEN, NJ ZIP 07036
Tech. Contact JOHN CRANE TEL (201) 589-7435
- County UNION 3. U.S. EPA IDENTIFICATION NUMBER
N J D 0 1 1 3 9 2 7 3 5
- Billing/Broker IT CORP.
Address 165 FIELOCREST AVE.
City/State EDISON, NJ ZIP 08818
Billing Contact LEAH WEBB TEL (201) 225-2000

Envirosafe Services Only
Application # D. J. MUELLER
PCN
CUST# 0
☐ DIRECT ☐ ACES
☐ BILLING BROKER ☐ ESPI
Sales Zone Code
TAX ☐ YES ☐ NO
Acceptance Code
Laboratory Test Code
Update Analysis Code

SECTION B - WASTE CHARACTERIZATION

Form 87-1

- Common Name for This Waste: SOIL CONTAMINATED W/ OIL + MERCURY
- Process Generating This Waste: OIL LEAKED ONTO SOIL OVER A PERIOD OF YEARS. MERCURY RESULTED FROM H₂ GAS FILLING.
- Annual Quantity: 40 1 ☒ Tons 2 ☐ Yards 3.1 3 ☐ Drums
- Shipment Duration: 5. Shipment Mode:
1 ☐ Permanent (1 Year or Longer) 1 ☒ Bulk 2 ☐ Palletized Boxes 3 ☐ Woven Cloth Bags 4 ☐ Metal Drums
2 ☒ Temporary (Less Than 1 Year) 5 ☐ Other:

SECTION C - PHYSICAL PROPERTIES

- Describe Physical State at 70° F:
1 ☒ Dry Solid 2 ☐ Damp Solid 3 ☐ Semi-Solid / Gel 4 ☐ Flowable Liquid 6 ☐ Labpack
- Describe Load Bearing Strength at 70° F: 2.1 Penetrometer PSI: 2.2 % Solids @105°C:
1 ☒ Solid / Rigid 2 ☐ Sludge 3 ☐ Weak / None 90
- Describe Physical Appearance of Waste (Include Color): BROWN SOIL 4. Apparent Density of Waste: 2200 Lb./ Cu. Yard
- Flash Point (TAG or Setafash Closed Cup): 5.1 Actual Flash Pt: 5.2 Combustible:
1 ☐ 25-70° F 2 ☐ 70-100° F 3 ☐ 100-140° F 4 ☒ >140° F °F 1 ☐ Yes 2 ☒ No
- pH (10 % Slurry in Distilled Water for Solids): 6.1 Actual pH (S.U.):
1 ☐ < 2.0 2 ☐ 2.0-5.0 3 ☒ 5.0-10.0 4 ☐ 10.0-12.5 5 ☐ > 12.5
- Describe Odor of Waste: 8. Describe Temperature of Waste at Time of Disposal:
1 ☒ None 2 ☐ Slight 3 ☐ Strong 1 ☒ Ambient -100° F 2 ☐ 100-140° F 3 ☐ >140° F

SECTION D - WASTE COMPOSITION

1. List all components within the waste stream by percentage.
Account for 100 percent of waste in the TYPICAL % column.

Application #

PCN

	TYPICAL %	RANGE %
SOIL	99	-
PETROLEUM HYDROCARBONS	1	-
MERCURY	12 mg/kg	-
		-
		-
		-
		-
		-
		-
		-

SECTION E - ANALYTICAL REPORT

PARAMETER	mg/Kg (Total)	mg/L (Extract)	PARAMETER	mg/Kg (Total)	mg/L (Extract)	PARAMETER	mg/Kg (Total)	mg/L (Extract)
Aluminum			Total Cyanide	NONE		Acetone	NONE	
Antimony			Free Cyanide			Butanol		
Arsenic		0.003	Total Sulfide			Carbon Disulfide		
Barium		<1.0	Soluble Sulfide			Carbon Tetrachloride		
Beryllium			Phenolics			Chlorobenzene		
Cadmium		<0.01	Chloride			Cresols-Cresylic Acid		
Chromium (hex)			Fluoride			Cyclohexanone		
Chromium (tot)			Phosphate			1,2-Dichlorobenzene		
Cobalt			Sulfate			Ethyl Acetate		
Copper			Nitrate-N			Ethyl Benzene		
Iron			Nitrite-N			Ethyl Ether		
Lead			Ammonia-N			Isobutanol		
Mercury	12	<0.0050	Kjeldahl-N	✓		Methanol		
Nickel			Oil & Grease	10,000		Methylene Chloride		
Selenium		<0.001	TOC (Carbon)	10,000		Methyl Ethyl Ketone		
Silver		<0.02	TOX (Halogen)	-		Methyl Isobutyl Ketone		
Thallium			PCB's	NONE		Nitrobenzene		
Zinc						Pyridine		
						Tetrachloroethylene		
						Toluene		
						1,1,1-Trichloroethane		
Endrin	NONE					Trichlorotrifluoroethane		
Lindane						Trichloroethylene		
Methoxychlor						Trichlorofluoromethane		
Toxaphene						Xylene(s)	✓	
2,4-D								
2,4,5-TP/Silvex	✓							

SECTION F - WASTE CLASSIFICATION

1. RCRA Waste Description from 40 CFR 261: ☒ RCRA NON-HAZARDOUS

Application #	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
PCN	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

2. RCRA EPA Waste Code(s) from 40 CFR 261:

3. Does Waste Contain the Following:

EXPLOSIVE	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
SHOCK SENSITIVE	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
PYROPHORIC	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
PATHOGENIC	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
INFECTIOUS	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
RADIOACTIVE	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO

If YES, Explain in Section H

SECTION G - U.S. DOT SHIPPING DESCRIPTION

1. U.S. DOT Proper Shipping Name (PSN):

NON-HAZARDOUS SOIL CONTAMINATED WITH OIL

2. DOT Hazard Class:

N/A

3. Code:

--	--

4. UN/NA Number:

--	--	--	--	--

5. Additional DOT Descriptions:

SECTION H - ADDITIONAL COMMENTS

1. Additional Comments, Descriptions, or Waste Stream Information:

VENDORS OF H₂ GAS PRODUCED

PROCESS DIAGRAM OR PHOTOGRAPH

IT AS A BYPRODUCT OF

MANUFACTURING CHLORINE

GAS: H₂ RUNTHROUGH MERCURY BATTERY CELLS → Cl₂ ↑ + H₂ ↑

→ THE HYDROGEN GAS + MERCURY THROUGH A PIPELINE FROM VENDORS.

THE MERCURY FROM THESE

BATTERY CELLS ATTACHED

TO THE HYDROGEN GAS.

THE MERCURY WAS IN

GASEOUS FORM; HOWEVER,

IN THE QUANTITIES PRESENT

IT EVOLVED INTO VAPOR

THEN LIQUID MERCURY.

UNION CARBIDE RECEIVED

SECTION J - CERTIFICATION

Application #	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
PCN	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

1. GENERATOR CERTIFICATION STATEMENT:

I HEREBY CERTIFY THAT AS AN AUTHORIZED REPRESENTATIVE OF THE GENERATOR NAMED HEREIN, ALL INFORMATION SUBMITTED IN THIS AND ALL ATTACHED DOCUMENTS IS TRUE AND ACCURATE. TO THE BEST OF MY KNOWLEDGE, ALL KNOWN AND SUSPECTED HAZARDOUS COMPONENTS HAVE BEEN INCLUDED IN THE DOCUMENTATION.

SIGNATURE *[Signature]* DATE 01/18/88 TITLE OPER. MGR.

SECTION K - DISPOSAL SITE USE ONLY

- | | |
|---|--|
| 01. <input checked="" type="checkbox"/> Normal Operating Arrival Hours: Bulk 6:45 AM - 3:30 PM. Drums, Bags, Boxes and Special Handling 7:00 AM - 2:00 PM | |
| 02. <input checked="" type="checkbox"/> Product Code Number Must Appear on Each Manifest or Shipping Paper Required by EPA or DOT | |
| 03. <input type="checkbox"/> Bulk Disposal Charges Will be Billed by the Cubic Yard if Waste Density is Less Than 2000 Pounds per Cubic Yard | |
| 04. <input type="checkbox"/> Acceptance Ends _____; Provide Waste Minimization Data to ESOI for OEPA by _____ To Continue | |
| 05. <input type="checkbox"/> Generator Must Provide Updated Analysis _____, 19____ and Annually Thereafter | |
| 06. <input type="checkbox"/> pH of a 10% Slurry of Waste in Distilled Water Must be at Least _____ but Less Than _____ by ESOI Methods | |
| 07. <input type="checkbox"/> Flash Point of Incoming Material Must be _____ °F or Greater by ESOI Methods | |
| 08. <input type="checkbox"/> Bulk: No Unauthorized Materials or Free Liquids | 22. <input type="checkbox"/> Generator Must Schedule Containers, Obtain Acc. No. |
| 09. <input type="checkbox"/> Bulk Scheduling Requirements | 23. <input type="checkbox"/> PCN Stenciled on Each Drum or Container (Top, Side) |
| 10. <input type="checkbox"/> Bulk PCN's Prohibition on Mix Without Authorization | 24. <input type="checkbox"/> Drums No Free Liquid, Void Space, Metal, < 800 Pounds |
| 11. <input type="checkbox"/> General Bulk Waste Mixing Instructions | 25. <input type="checkbox"/> Containerized Material Must be Solid, Non-flowable |
| 12. <input type="checkbox"/> Bulk Must Contain Sufficient Moisture to Suppress Dust | 26. <input type="checkbox"/> Exemption Requirements for Land Ban Waste |
| 13. <input type="checkbox"/> Woven Cloth Bags; Acceptance Requirements | 27. <input type="checkbox"/> Certify Waste Does Not Contain F001-F005 Solvents |
| 14. <input type="checkbox"/> Palletized Boxes; Acceptance Requirements | 28. <input type="checkbox"/> Participation in Monthly Analytical Survey |
| 15. <input type="checkbox"/> Material Solid, Non-flowable & Penetrometer Standard | 29. <input type="checkbox"/> Heat Generation in Contact With Water Requirements |
| 16. <input type="checkbox"/> Miscellaneous Debris 3 Feet Dimensional Limit | 30. <input type="checkbox"/> Caustic Concentration Limit Requirements |
| 17. <input type="checkbox"/> ESOI has Stds. for Odor, Temperature & Liquid Stability | 31. <input type="checkbox"/> Gas Generation in Contact With Water Requirements |
| 18. <input type="checkbox"/> Odoriferous Waste May Not be Acceptable | 32. <input type="checkbox"/> Standard Conditions for Custom Asbestos |
| 19. <input type="checkbox"/> Cyanide or Sulfide Permit Limit Requirements | 33. <input type="checkbox"/> Standard Conditions for Generic Asbestos |
| 20. <input type="checkbox"/> PCB Concentration Limit Requirements | 34. <input type="checkbox"/> Standard Conditions for Custom Labpacks |
| 21. <input type="checkbox"/> Oxidizer Concentration Limits & Isolation Requirements | 35. <input type="checkbox"/> Standard Conditions for Generic Labpacks |

SIGNATURE _____ DATE _____ TITLE _____

SECTION L - REGULATORY AGENCY USE ONLY

1. ACCEPTANCE STATUS:

1 ☐ ACCEPTED 2 ☐ CONDITIONAL ACCEPTANCE 4 ☐ ACCEPTANCE DENIED

2. CONDITIONS FOR ACCEPTANCE OR REASONS FOR DENIAL:

SIGNATURE _____ TITLE _____ DATE _____ AGENCY _____

3. ACCEPTANCE AMENDED:

SIGNATURE _____ TITLE _____ DATE _____ AGENCY _____



ANALYSIS DATA SHEET

JOB # 305281 LOT # 5 SAMPLE DATE 16/2/67 SAMPLE # 03 BOTTLE # 1898 101845

DATE RECEIVED 3/18/88

LOT NUMBER 6267

PROJECT NAME: Union Carbide - Linden

NO. OF BOTTLES: 1

DESCRIPTION: Compress. #3 Small Tank cooler Post Clean WPR PAGE 1 OF 6

RESULTS (as ppm unless specified)

☐ WET WT.

☐ DRY WT.

TEST PARAMETER		✓	RESULT	ANALYSIS DATE	INITIAL	TEST PARAMETER		✓	RESULT	ANALYSIS DATE	INITIAL
24-HOUR ANALYSIS	Acidity (as CaCO ₃)					METALS	Aluminum (Al)				
	Alkalinity (as CaCO ₃)						Antimony (Sb)				
	Ammonia-N						Arsenic (As)				
	BOD ₅						Barium (Ba)				
	Chlorine Demand (at 15 min)						Beryllium (Be)				
	Chlorine Residual						Cadmium (Cd)				
	Coliform-Fecal (# col./100ml)						Calcium (Ca)				
	Coliform-Total (# col./100ml)						Chromium (Cr)				
	Color (Pt. Co. units)						Cobalt (Co)				
	Cyanide (Total)						Copper (Cu)				
	Dissolved Oxygen						Iron (Fe)				
	Hexavalent Chromium						Lead (Pb)				
	Nitrate-N						Magnesium (Mg)				
	Nitrite-N						Manganese (Mn)				
	Nitrogen-Kjeldahl						Mercury (Hg)	✓	0.18 mg/wipe	3/19 D	
	Nitrogen-Organic						Molybdenum (Mo)				
	Oil & Grease Gr <input type="checkbox"/> IR <input type="checkbox"/>						Nickel (Ni)				
	Petro. Hydrocarbon Gr <input type="checkbox"/> IR <input type="checkbox"/>						Potassium (K)				
	Phosphate-P (Ortho)						Selenium (Se)				
	pH (units)						Silver (Ag)				
	Phenols (Total)						Sodium (Na)				
	Settleable Solids						Thallium (Tl)				
	Specific Conductance (umhos)						Tin (Sn)				
	Sulfite						Titanium (Ti)				
Surfactants					Vanadium (V)						
TOC					Zinc (Zn)						
TOX											
WET CHEMISTRY	Boron					EP. TOXICITY	Arsenic				
	Chloride						Barium				
	COD						Cadmium				
	Fluoride						Chromium				
	Hardness (as CaCO ₃)						Lead				
	Phosphate-P (Total)						Mercury				
	Silica						Selenium				
	Sulfate						Silver				
	Sulfide						Endrin				
	Total Ash						Lindane				
	Total Dissolved Solids						Methoxychlor				
	Total Solids						Toxaphene				
	Total Suspended Solids						2,4 - D				
	Total Volatile Solids						2,4,5 - TP				
Turbidity (NTU)											
MISC.	Flash Point (°F)					OTHER					
	Heating Value (BTU)										
	Organic Chloride (%)										
	Organic Sulfur (%)										
	Specific Gravity (g/ml)										
Viscosity (cp units)											

PROJECT MANAGER: _____

305281 5 6 2 6 7 0 3 1 8 9 8 10 1 8 4 7

DATE RECEIVED 3/18/88

LOT NUMBER 6267

PROJECT NAME: Union Carbide - Linden

NO. OF BOTTLES: 1

DESCRIPTION: Compress#3 Upper Heat Exchanger - PostClean WP 14


PAGE 2 OF 6

RESULTS (as ppm unless specified)

☐ WET WT. ☐ DRY WT.

TEST PARAMETER	✓	RESULT	ANALYSIS DATE	INITIAL	TEST PARAMETER	✓	RESULT	ANALYSIS DATE	INITIAL
Acidity (as CaCO ₃)					Aluminum (Al)				
Alkalinity (as CaCO ₃)					Antimony (Sb)				
Ammonia-N					Arsenic (As)				
BOD ₅					Barium (Ba)				
Chlorine Demand (at 15 min)					Beryllium (Be)				
Chlorine Residual					Cadmium (Cd)				
Coliform-Fecal (# col./100ml)					Calcium (Ca)				
Coliform-Total (# col./100ml)					Chromium (Cr)				
Color (Pt Co units)					Cobalt (Co)				
Cyanide (Total)					Copper (Cu)				
Dissolved Oxygen					Iron (Fe)				
Hexavalent Chromium					Lead (Pb)				
Nitrate-N					Magnesium (Mg)				
Nitrite-N					Manganese (Mn)				
Nitrogen-Kjeldahl					Mercury (Hg)	✓	5.8 mg/l	3/19	DM
Nitrogen-Organic					Molybdenum (Mo)				
Oil & Grease Gr <input type="checkbox"/> IR <input type="checkbox"/>					Nickel (Ni)				
Petro. Hydrocarbon Gr <input type="checkbox"/> IR <input type="checkbox"/>					Potassium (K)				
Phosphate-P (Ortho)					Selenium (Se)				
pH (units)					Silver (Ag)				
Phenols (Total)					Sodium (Na)				
Settleable Solids					Thallium (Tl)				
Specific Conductance (umhos)					Tin (Sn)				
Sulfite					Titanium (Ti)				
Surfactants					Vanadium (V)				
TOC					Zinc (Zn)				
TOX									
Boron					Arsenic				
Chloride					Barium				
COD					Cadmium				
Fluoride					Chromium				
Hardness (as CaCO ₃)					Lead				
Phosphate-P (Total)					Mercury				
Silica					Selenium				
Sulfate					Silver				
Sulfide					Endrin				
Total Ash					Endane				
Total Dissolved Solids					Methoxychlor				
Total Solids					Toxaphene				
Total Suspended Solids					2,4-D				
Total Volatile Solids					2,4,5-TP				
Turbidity (NTU)									
Flash Point (°F)									
Heating Value (BTU)									
Organic Chloride (%)									
Organic Sulfur (%)									
Specific Gravity (g/ml)									
Viscosity (cp units)									

PROJECT MANAGER


 305281 5 6 2 6 7 0 3 1 8 9 8 10 1 8 4 6
 LOT # SAMPLE DATE SAMPLE # BOTTLE #

DATE RECEIVED 3/18/88
 LOT NUMBER 6267

PROJECT NAME Union Carbide - Linden
 DESCRIPTION Compress. #3 Lower Heat Exchanger - Post Clean WP13

NO. OF BOTTLES 1
 PAGE 3 OF 6

RESULTS (as ppm unless specified)

☐ WET WT. ☐ DRY WT.

	TEST PARAMETER	✓	RESULT	ANALYSIS DATE	INITIAL		TEST PARAMETER	✓	RESULT	ANALYSIS DATE	INITIAL
24-HOUR ANALYSIS	Acidity (as CaCO ₃)					METALS	Aluminum (Al)				
	Alkalinity (as CaCO ₃)						Antimony (Sb)				
	Ammonia-N						Arsenic (As)				
	BOD ₅						Barium (Ba)				
	Chlorine Demand (at 15 min)						Beryllium (Be)				
	Chlorine Residual						Cadmium (Cd)				
	Coliform-Fecal # col. 100ml						Calcium (Ca)				
	Coliform-Total # col. 100ml						Chromium (Cr)				
	Color (Pt-Co Units)						Cobalt (Co)				
	Cyanide-Total						Copper (Cu)				
	Dissolved Oxygen						Iron (Fe)				
	Hexavalent Chromium						Lead (Pb)				
	Nitrate-N						Magnesium (Mg)				
	Nitrite-N						Manganese (Mn)				
	Nitrogen-Nitrate						Mercury (Hg)	✓	0.11 mg/wipe	3/19	0
	Nitrogen-Organic						Molybdenum (Mo)				
	Oil & Grease Gr <input type="checkbox"/> IR <input type="checkbox"/>						Nickel (Ni)				
	Petro-Hydrocarbon Gr <input type="checkbox"/> IR <input type="checkbox"/>						Potassium (K)				
	Phosphate-P (Ortho)						Selenium (Se)				
	pH (units)						Silver (Ag)				
	Phenols-Total						Sodium (Na)				
	Settleable Solids						Thallium (Tl)				
	Specific Conductance (umhos)						Tin (Sn)				
	Sulfite						Titanium (Ti)				
	Surfactants						Vanadium (V)				
	TOC						Zinc (Zn)				
	TOX					EP TOXICITY	Arsenic				
WET CHEMISTRY	Boron						Barium				
	Chloride						Cadmium				
	COD						Chromium				
	Fluoride						Lead				
	Hardness (as CaCO ₃)						Mercury				
	Phosphate-P (Total)						Selenium				
	Silica						Silver				
	Sulfate						Endrin				
	Sulfide						Lindane				
	Total Ash						Methoxychlor				
	Total Dissolved Solids						Toxaphene				
	Total Solids						2,4-D				
	Total Suspended Solids						2,4,5-TP				
	Total Volatile Solids					OTHER					
MISC.	Turbidity NTU										
	Flash Point (°F)										
	Heating Value (BTU)										
	Organic Chloride (%)										
	Organic Sulfur (%)										
	Specific Gravity (g/ml)										
	Viscosity (cP units)										

PROJECT MANAGER _____

305281 516267031898101848
 LOT # SAMPLE DATE SAMPLE # BOTTLE #

DATE RECEIVED 3/18/88
 LOT NUMBER 6267

PROJECT NAME Union Carbide - Linden

NO. OF BOTTLES: 1

DESCRIPTION Compress. #3 Platform, Post Clean

WP 15 PAGE 4 OF 5

RESULTS (as ppm unless specified)

☐ WET WT. ☐ DRY WT.

24-HOUR ANALYSIS									
TEST PARAMETER	✓	RESULT	ANALYSIS DATE	INITIAL	TEST PARAMETER	✓	RESULT	ANALYSIS DATE	INITIAL
Acidity (as CaCO ₃)					Aluminum (Al)				
Alkalinity (as CaCO ₃)					Antimony (Sb)				
Ammonia-N					Arsenic (As)				
BOD ₅					Barium (Ba)				
Chlorine Demand (at 15 min)					Beryllium (Be)				
Chlorine Residual					Cadmium (Cd)				
Coliform-Fecal (# col/100ml)					Calcium (Ca)				
Coliform-Total (# col/100ml)					Chromium (Cr)				
Color (Pt Co Units)					Cobalt (Co)				
Cyanide (Total)					Copper (Cu)				
Dissolved Oxygen					Iron (Fe)				
Hexavalent Chromium					Lead (Pb)				
Nitrate-N					Magnesium (Mg)				
Nitrite-N					Manganese (Mn)				
Nitrogen-Kjeldahl					Mercury (Hg)	✓	0.16 mg/wipe 3/19	DA	
Nitrogen-Organic					Molybdenum (Mo)				
Oil & Grease (Gr) <input type="checkbox"/> IR <input type="checkbox"/>					Nickel (Ni)				
Petro. Hydrocarbon (Gr) <input type="checkbox"/> IR <input type="checkbox"/>					Potassium (K)				
Phosphate-P (ppm)					Selenium (Se)				
pH (units)					Silver (Ag)				
Phenols (Total)					Sodium (Na)				
Settleable Solids					Thallium (Tl)				
Specific Conductance (umhos)					Tin (Sn)				
Sulfite					Titanium (Ti)				
Surfactants					Vanadium (V)				
TOC					Zinc (Zn)				
TOX									
WET CHEMISTRY					METALS				
WET CHEMISTRY					EP. TOXICITY				
MISC.					OTHER				

PROJECT MANAGER: _____

ANALYSIS DATA SHEET

DATE RECEIVED 3/19/88

LOT NUMBER 6267

PROJECT NAME: Union Carbide - London

NO. OF BOTTLES: 1

DESCRIPTION: Compress. #3, 4th Stage Cylinder, Post Clean WP 16

PAGE 5 OF 6

RESULTS (as ppm unless specified)

☐ WET WT.☐ DRY WT.[illegible]

PROJECT MANAGER:

ANALYSIS DATA SHEET

305281 51626703189801850

LOT # SAMPLE DATE SAMPLE # BOTTLE #

DATE RECEIVED 3/18/88

LOT NUMBER 6267

PROJECT NAME: Union Carbide - Linden

NO. OF BOTTLES: 1

DESCRIPTION: Field Blank WP 17

PAGE 6 OF 6

RESULTS (as ppm unless specified)

☐ WET WT. ☐ DRY WT.

TEST PARAMETER	✓	RESULT	ANALYSIS DATE	INITIAL	TEST PARAMETER	✓	RESULT	ANALYSIS DATE	INITIAL
Acidity (as CaCO ₃)					Aluminum (Al)				
Alkalinity (as CaCO ₃)					Antimony (Sb)				
Ammonia-N					Arsenic (As)				
BOD ₅					Barium (Ba)				
Chlorine Demand (at 15 min)					Beryllium (Be)				
Chlorine Residual					Cadmium (Cd)				
Coliform-Fecal (# col/100ml)					Calcium (Ca)				
Coliform-Total (# col/100ml)					Chromium (Cr)				
Color (Pt-Co units)					Cobalt (Co)				
Cyanide (Total)					Copper (Cu)				
Dissolved Oxygen					Iron (Fe)				
Hexavalent Chromium					Lead (Pb)				
Nitrate-N					Magnesium (Mg)				
Nitrite-N					Manganese (Mn)				
Nitrogen-Kjeldahl					Mercury (Hg)	✓	0.0002 mg/l, pc 3/19/88		
Nitrogen-Organic					Molybdenum (Mo)				
Oil & Grease Gr <input type="checkbox"/> IR <input type="checkbox"/>					Nickel (Ni)				
Petro Hydrocarbon Gr <input type="checkbox"/> IR <input type="checkbox"/>					Potassium (K)				
Phosphate-P Ortho					Selenium (Se)				
pH (units)					Silver (Ag)				
Phenols (Total)					Sodium (Na)				
Settleable Solids					Thallium (Tl)				
Specific Conductance (umhos)					Tin (Sn)				
Sulfite					Titanium (Ti)				
Surfactants					Vanadium (V)				
TOC					Zinc (Zn)				
TOX									
Boron					Arsenic				
Chloride					Barium				
COD					Cadmium				
Fluoride					Chromium				
Hardness as CaCO ₃					Lead				
Phosphate-P Total					Mercury				
Silica					Selenium				
Sulfate					Silver				
Sulfide					Endrin				
Total Asn					Lindane				
Total Dissolved Solids					Methoxychlor				
Total Solids					Toxaphene				
Total Suspended Solids					2,4 - D				
Total Volatile Solids					2,4,5 - TP				
Turbidity NTU									
Flash Point (°F)									
Heating Value (BTU)									
Organic Chloride (%)									
Organic Sulfur (%)									
Specific Gravity (g/ml)									
Viscosity (cP units)									

PROJECT MANAGER:

CHAIN-OF-CUSTODY RECORD

R/A Control No. 63373

C/C Control No. A 76322

PROJECT NAME/NUMBER Union Carbide - Linden 305281

LAB DESTINATION I.T. Edison

SAMPLE TEAM MEMBERS J. M. Hill

CARRIER/WAYBILL NO. _____

Sample Number	Sample Location and Description	Date and Time Collected	Sample Type	Container Type	Condition on Receipt (Name and Date)	Disposal Record No.
D1845	Comp #3 Small Tank Cooler, Post Clean ^{WP12}	3/18/88 13:15	WIPE	8oz glass jar	RUSH	
D1847	Comp #3 Upper Heat Exchanger, Post Clean ^{WP14}	3/18/88 13:43	WIPE	8oz glass jar		
D1848	Comp #3 Lower Heat Exchanger, Post Clean ^{WP13}	3/18/88 13:30	WIPE	8oz glass jar		
D1848	Comp #3 Platform WP15 Post Clean	3/18/88 14:05	WIPE	8oz glass jar		
D1849	Comp #3 4th Stage Cylinder, Post Clean ^{WP16}	3/18/88 14:15	WIPE	8oz glass jar		
D1850	Field Blank WP17	3/18/88 14:20	WIPE	8oz glass jar		

Special Instructions: Rush 24 hr.

Possible Sample Hazards: Hg

SIGNATURES: (Name, Company, Date and Time)

1. Relinquished By: Jacqueline M. Hill IT 3/18/88 e 1537
Received By: Sam Halifh IT 3-18-88 1537

3. Relinquished By: _____

Received by: _____

2. Relinquished By: _____

4. Relinquished By: _____

Received By: _____

Received By: _____



REQUEST FOR ANALYSIS

R/A Control No. 63373
C/C Control No. ~~76236~~ 76322
3/18/88
I.T. Edison

PROJECT NAME Union Carbide - Linden
PROJECT NUMBER 305281
PROJECT MANAGER Tom Hernon
BILL TO PC 3811 Edison

DATE SAMPLES SHIPPED _____
LAB DESTINATION _____
LABORATORY CONTACT _____
SEND LAB REPORT TO _____

PURCHASE ORDER NO. _____

DATE REPORT REQUIRED _____
PROJECT CONTACT _____
PROJECT CONTACT PHONE NO. _____

Sample No.	Sample Type	Sample Volume	Preservative	Requested Testing Program	Special Instructions
D1845	WIPE	1 gauze pad	NONE	Hg	RVSH
D1847	WIPE	"	"	Hg	RVSH
D1846	WIPE	"	"	Hg	RVSH
D1848	WIPE	"	"	Hg	RVSH
D1849	WIPE	"	"	Hg	RVSH
D1850	WIPE	"	"	Hg	RVSH

TURNAROUND TIME REQUIRED: (Rush must be approved by the Project Manager) 24 hr turnaround
Normal _____ Rush X (Subject to rush surcharge)

POSSIBLE HAZARD IDENTIFICATION: (Please indicate if sample(s) are hazardous materials and/or suspected to contain high levels of hazardous substances)

Nonhazard _____ Flammable _____ Skin Irritant _____ Highly Toxic _____ Other Hg
(Please Specify)

SAMPLE DISPOSAL: (Please indicate disposition of sample following analysis. Lab will charge for packing, shipping, and disposal.)

Return to Client _____ Disposal by Lab _____

FOR LAB USE ONLY

Received By _____

Date/Time _____

WHITE - Original, to accompany samples

YELLOW - Field copy

WP 18

DATE	3	22	88		
TIME	7:14	50	16	48	WP 28
PAGE	1	OF			WP 29
PAGE					
PROJECT NO.	305281				

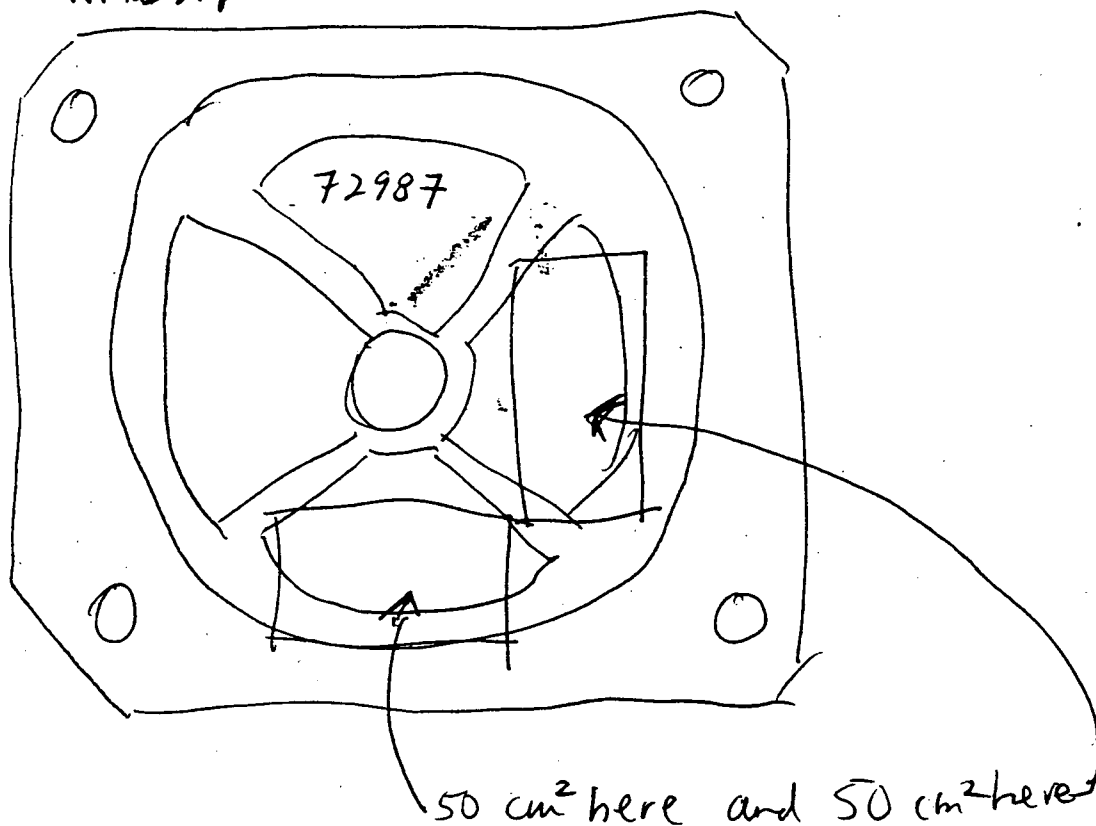
SAMPLE COLLECTION LOG

PROJECT NAME Union Carbide - Linden
 SAMPLE NO. D 1852 + D 1863 WP 18 + WP 28
 SAMPLE LOCATION Comp. #1 Intake Valve Cover, Chamber #1, Preclean + Post Clean
 SAMPLE TYPE WIPE
 COMPOSITE YES NO
 COMPOSITE TYPE _____
 DEPTH OF SAMPLE _____
 WEATHER _____

CONTAINERS USED	AMOUNT COLLECTED
8oz glass jar	1 gauze pad
8oz glass jar	1 gauze pad

COMMENTS:

WP 18 - Preclean
 WP 28 - Post Clean



PREPARED BY: _____

DATE	03	22	88			
TIME	15	05				
PAGE	2 OF					
PAGE						
PROJECT NO. 305281						

SAMPLE COLLECTION LOG

PROJECT NAME Union Carbide - Linden

SAMPLE NO. D1853 WP19

SAMPLE LOCATION ~~cont #3~~ Field Blank

SAMPLE TYPE	CONTAINERS USED	AMOUNT COLLECTED
WIPE	8oz glass jars	1 gauze pad
COMPOSITE <input type="checkbox"/> YES <input type="checkbox"/> NO		
COMPOSITE TYPE		
DEPTH OF SAMPLE		
WEATHER		

COMMENTS:

A gauze pad was moistened w/ HNO_3
from the sprayer, then placed in a jar

PREPARED BY: _____

SAMPLE COLLECTION LOG

PROJECT NAME Union Carbide - Linden

SAMPLE NO. D1854 WP 20

SAMPLE LOCATION Comp. # 3, 3rd Stage Piston, Post-Clean

SAMPLE TYPE WIPE

COMPOSITE YES NO

COMPOSITE TYPE _____

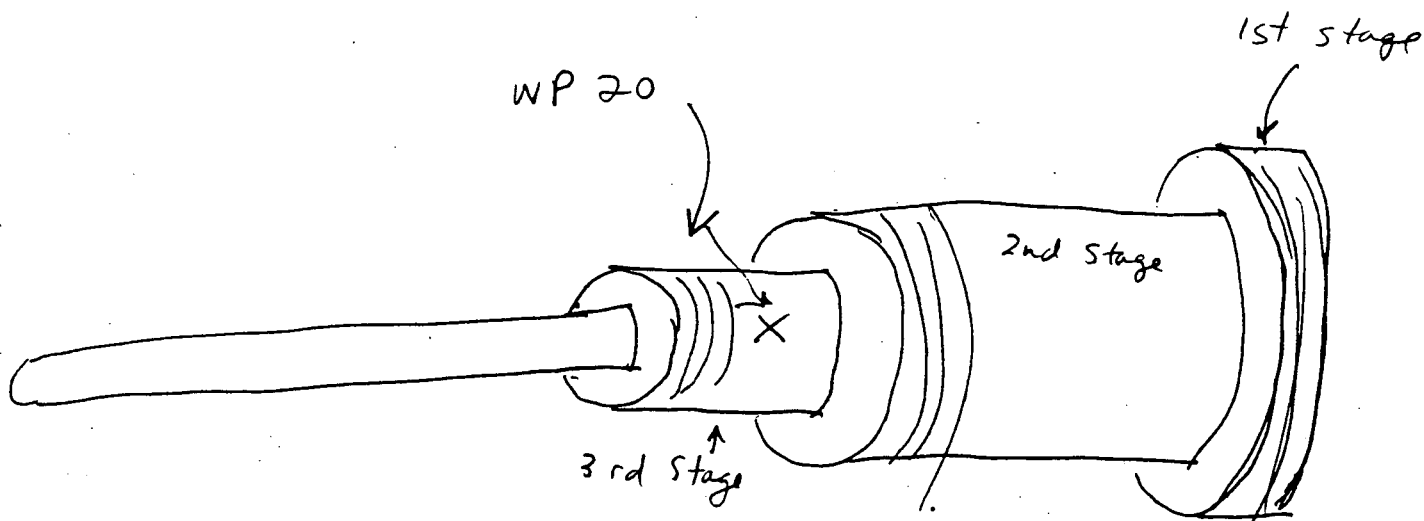
DEPTH OF SAMPLE _____

WEATHER _____

CONTAINERS USED	AMOUNT COLLECTED
<u>8oz glass jar</u>	<u>gauze pad</u>
_____	_____
_____	_____

COMMENTS:

2nd Time this piece was sampled



PREPARED BY: _____

DATE	3	22	88			
TIME	15	25				
PAGE	4 OF					
PAGE						
PROJECT NO. 305281						

SAMPLE COLLECTION LOG

PROJECT NAME Union Carbide - Linden

SAMPLE NO. D1955

SAMPLE LOCATION Comp. #3 1st Stage Cylinder, Post Clean WP 21

SAMPLE TYPE WIPF

COMPOSITE YES NO

COMPOSITE TYPE _____

DEPTH OF SAMPLE _____

WEATHER _____

CONTAINERS
USED

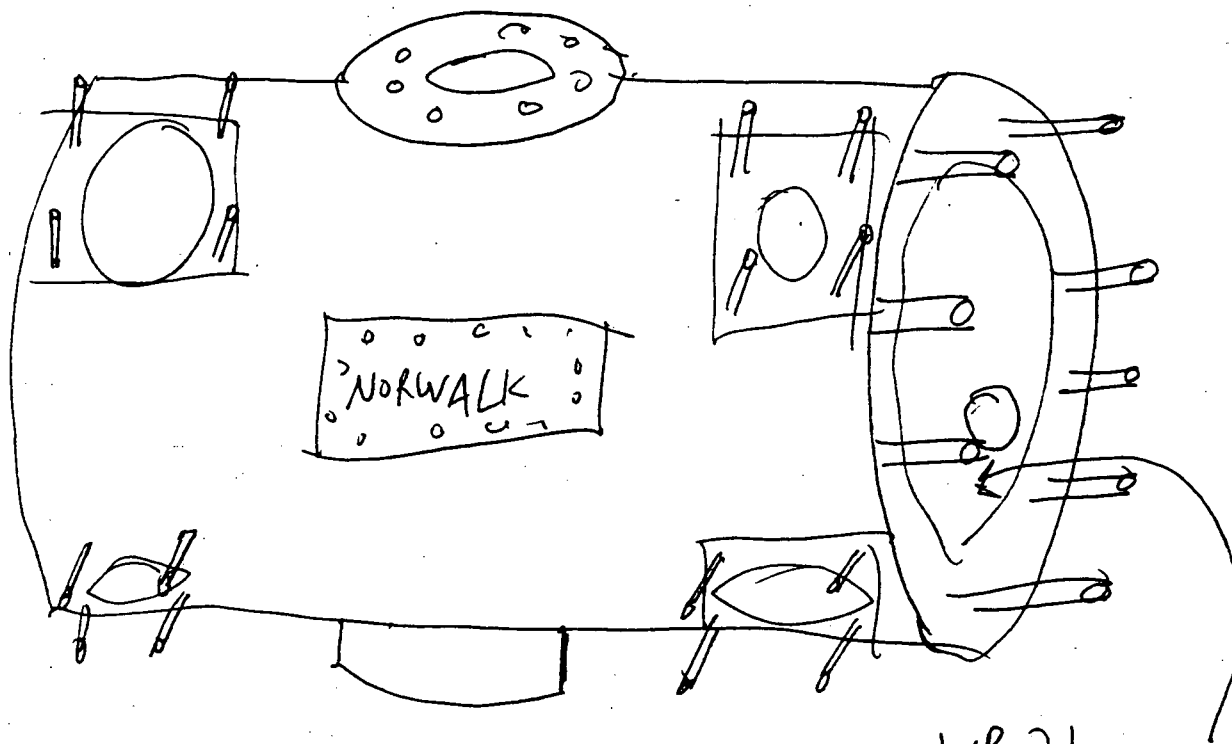
AMOUNT
COLLECTED

8oz glass jar

gauze Pad

COMMENTS:

2nd time this piece was sampled.



WP 21
taken Just inside Lip

PREPARED BY: _____

DATE	3	22	88		
TIME	15	35			
PAGE	5 OF				
PAGE					
PROJECT NO. 305281					

SAMPLE COLLECTION LOG

PROJECT NAME Union Carbide - Linden

SAMPLE NO. D 1856 WP 22

SAMPLE LOCATION Compress. # 3, 2nd Stage Cylinder, Post Clean

SAMPLE TYPE WIPE

COMPOSITE YES NO

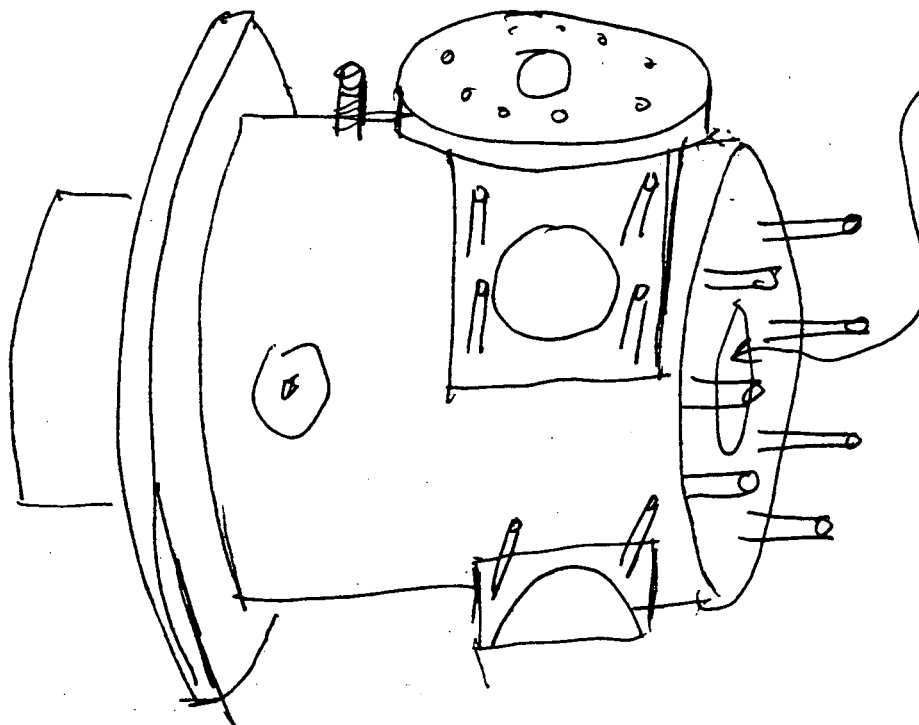
COMPOSITE TYPE _____

DEPTH OF SAMPLE _____

WEATHER _____

CONTAINERS USED	AMOUNT COLLECTED
<u>8 oz glass jar</u>	<u>Gauze Pad</u>
_____	_____
_____	_____

COMMENTS: 2nd Time this piece was sampled



WP 22
Taken just
inside Lip

PREPARED BY: _____

DATE	5	24	88		
TIME	15	50			
PAGE	OF				
PAGE					
PROJECT NO. 305281					

SAMPLE COLLECTION LOG

PROJECT NAME Union Carbide - Linden

SAMPLE NO. D 1857 WP 23

SAMPLE LOCATION Comp #3, 4th Stge Cylinder, Post Clean

SAMPLE TYPE WIPE

COMPOSITE YES ☒ NO

COMPOSITE TYPE _____

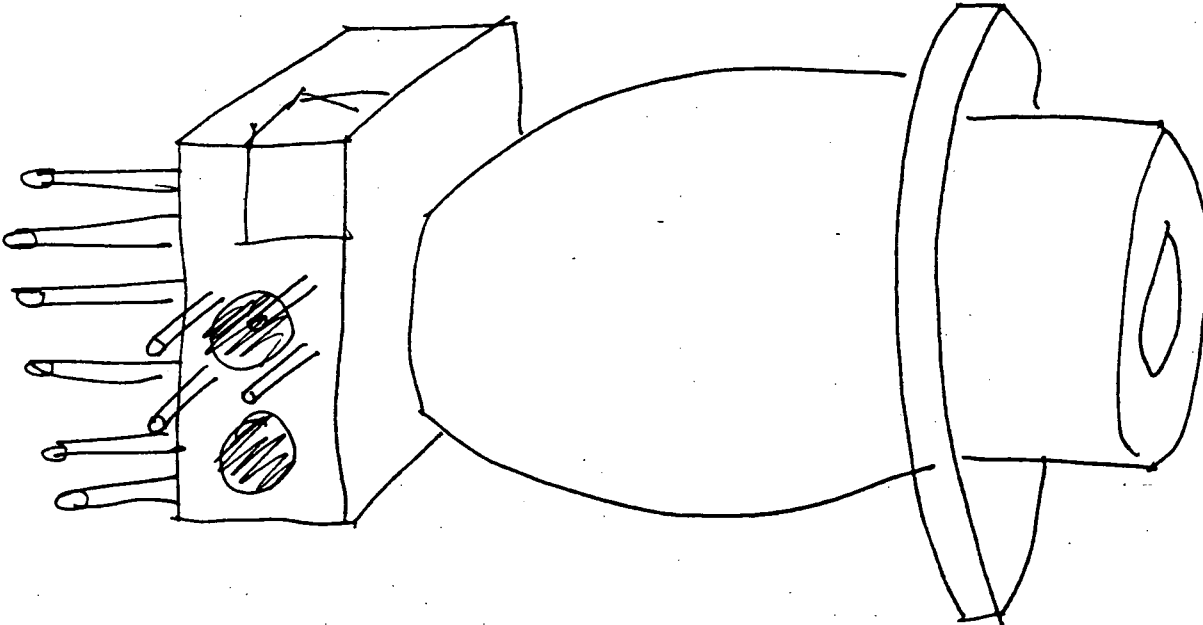
DEPTH OF SAMPLE _____

WEATHER _____

CONTAINERS USED	AMOUNT COLLECTED
<u>8oz glass jar</u>	<u>1 gauze pad</u>

COMMENTS:

3rd Sample taken on this piece



PREPARED BY: _____

DATE	3	12	88		
TIME	16	00			
PAGE	OF				
PAGE					
PROJECT NO. 305291					

SAMPLE COLLECTION LOG

PROJECT NAME Union Carbide - Linden

SAMPLE NO. D 1058 ~~1058~~

SAMPLE LOCATION Sample of water inside the Small Inner cooler Post Clean

SAMPLE TYPE Water

CONTAINERS USED	AMOUNT COLLECTED
<u>2 8oz glass jars</u>	<u>2 x 8oz</u>

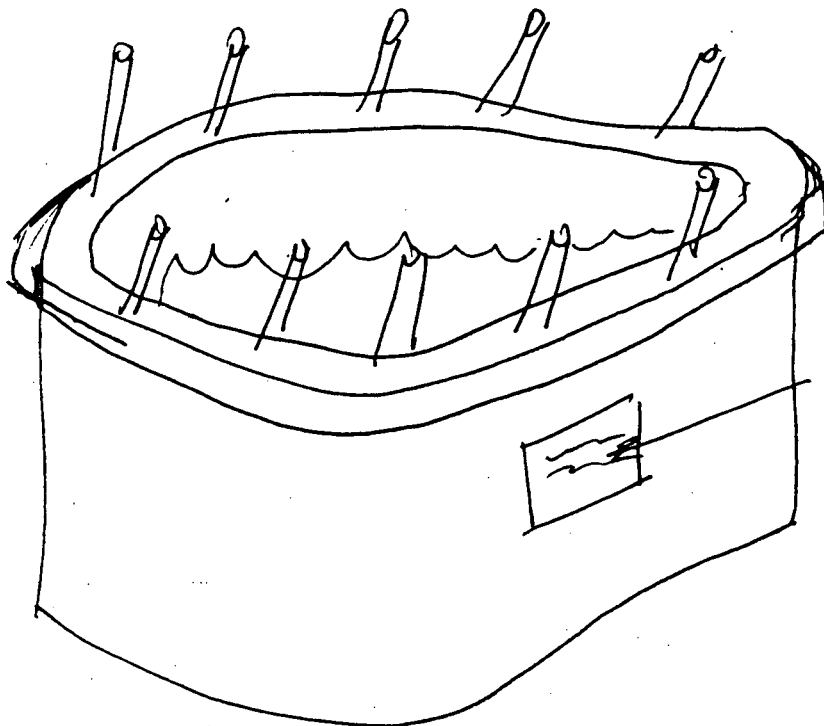
COMPOSITE YES NO

COMPOSITE TYPE _____

DEPTH OF SAMPLE _____

WEATHER _____

COMMENTS:



Serial# 50495-1

PREPARED BY: _____



INTERNATIONAL
TECHNOLOGY
CORPORATION

DATE	3	22	08			
TIME	16	14				
PAGE	OF					
PAGE						
PROJECT NO. 305281						

SAMPLE COLLECTION LOG

PROJECT NAME Union Carbide Linden

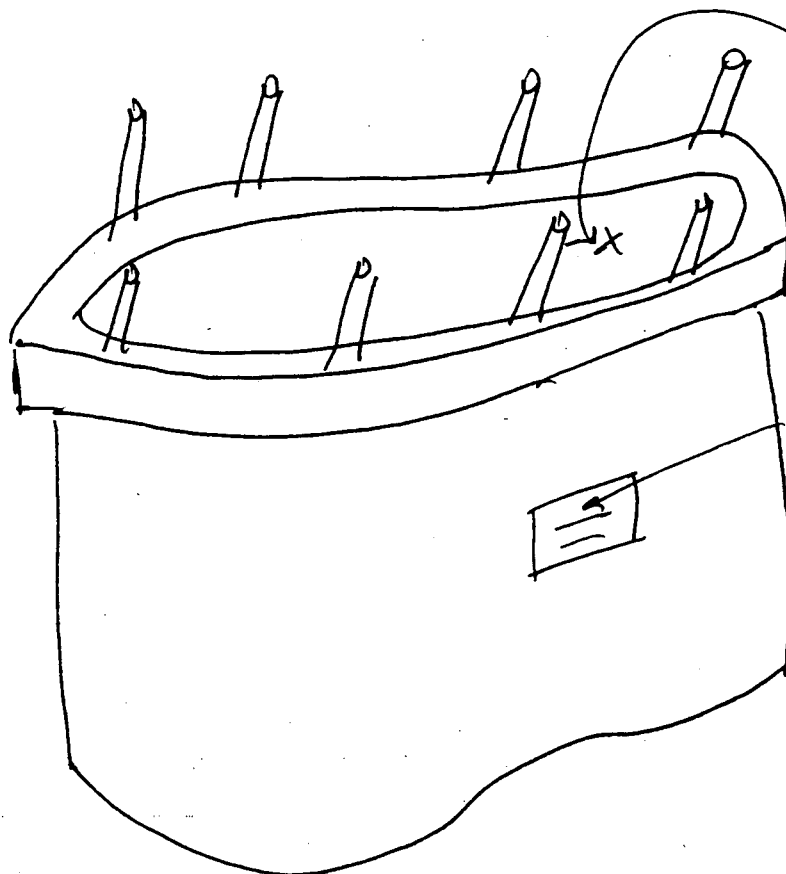
SAMPLE NO. D-1859 WP ~~24~~ 24

SAMPLE LOCATION Comp. #3 small inner cooler Post Clean

SAMPLE TYPE WIPE

COMPOSITE	CONTAINERS USED	AMOUNT COLLECTED
<u>YES</u> <input checked="" type="checkbox"/> <u>NO</u>	<u>Boz glass jar</u>	<u>1 gwcc pad</u>
COMPOSITE TYPE _____		
DEPTH OF SAMPLE _____		
WEATHER _____		

COMMENTS:



WP 24
taken on
inside wall

S# 50495-1

PREPARED BY: _____

DATE	3	22	88		
TIME	16	30			
PAGE	OF				
PAGE					
PROJECT NO. 305281					

SAMPLE COLLECTION LOG

PROJECT NAME Union Carbide Linden

SAMPLE NO. D 1859 WP 25

SAMPLE LOCATION Comp # 3 Lower Heat Exchanger, Post Clean

SAMPLE TYPE WIPE

COMPOSITE YES ☒ NO

COMPOSITE TYPE _____

DEPTH OF SAMPLE _____

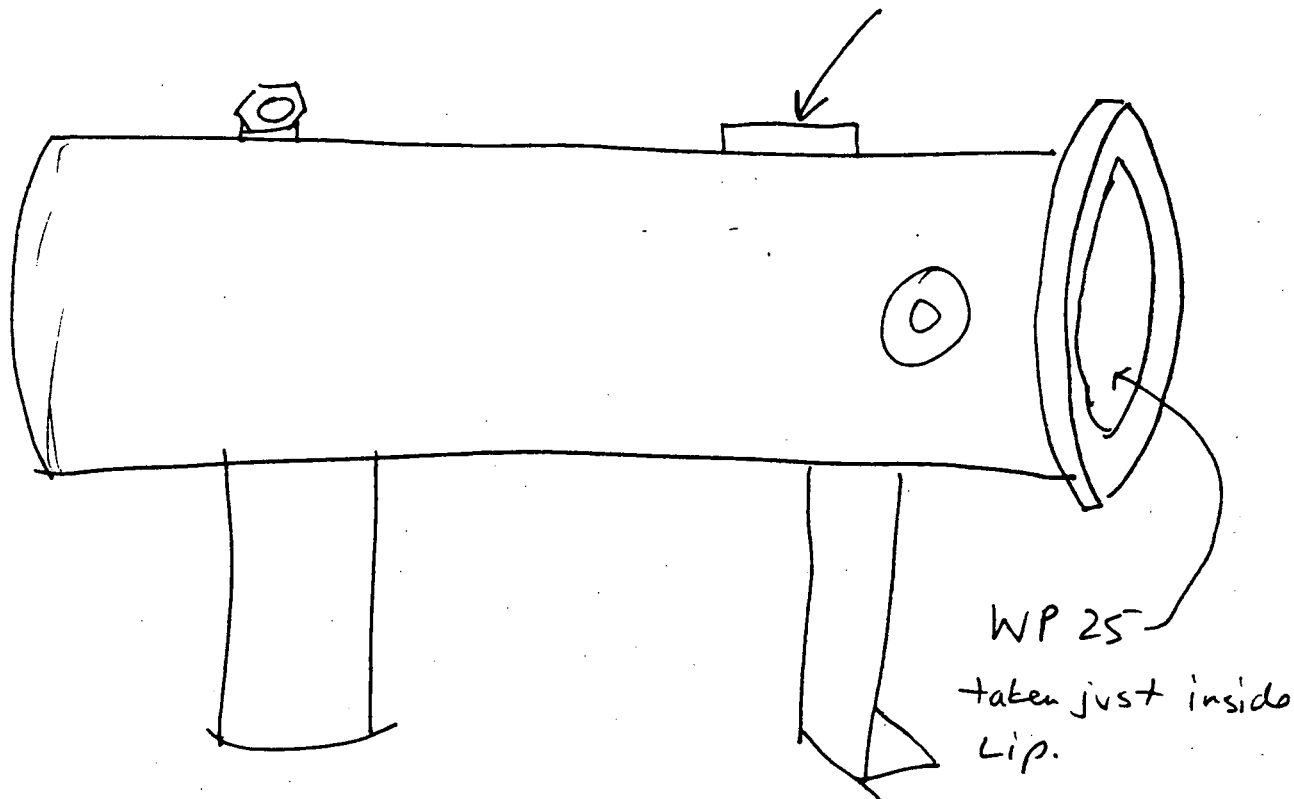
WEATHER _____

CONTAINERS USED	AMOUNT COLLECTED
8oz glass jar	1 gauze pad

COMMENTS:

2nd Sample taken on this piece

Serial # U-451



PREPARED BY: _____

DATE	3	22	88		
TIME	16	35			
PAGE	___ OF ___				
PAGE					
PROJECT NO. 305281					

SAMPLE COLLECTION LOG

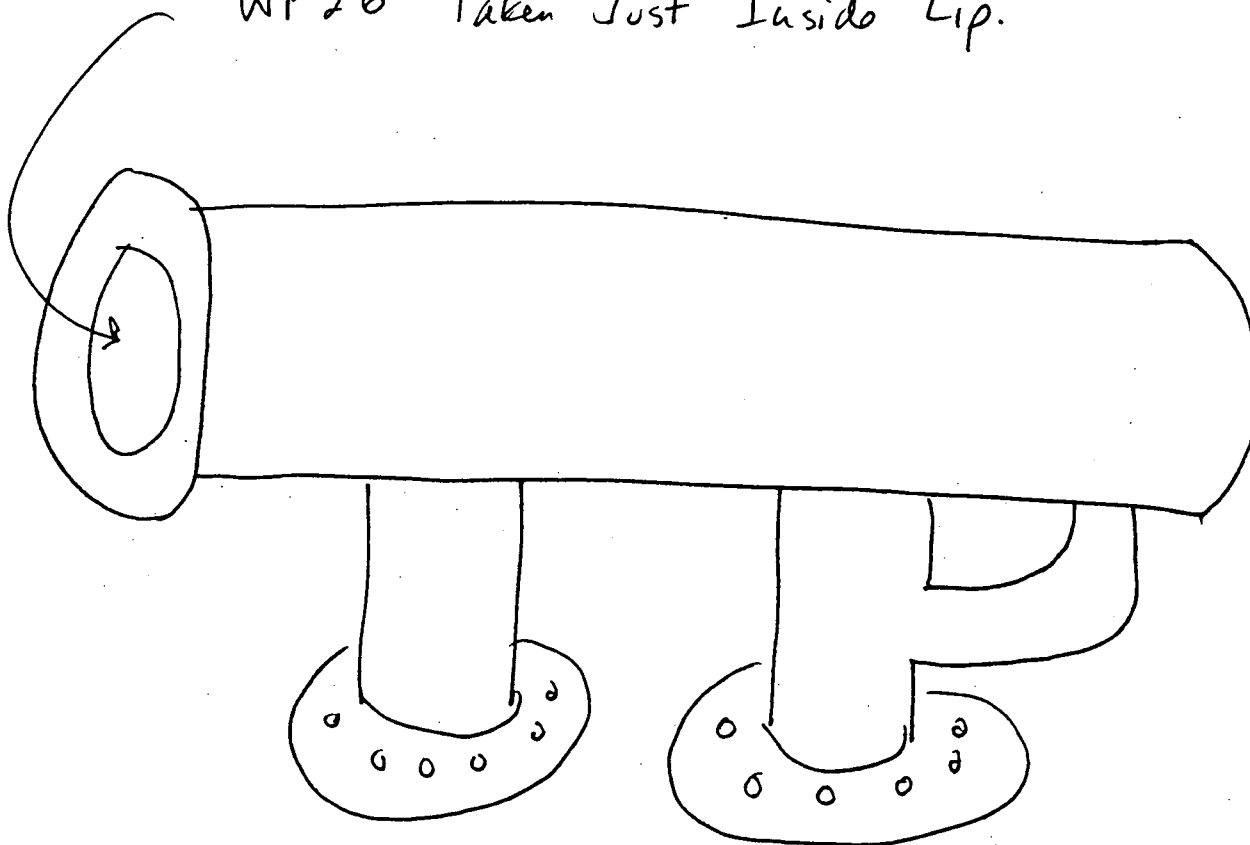
PROJECT NAME Union Carbide - Linden
 SAMPLE NO. P1861
 SAMPLE LOCATION Comp #3 upper heat exchanger, Post Clean WP26
 SAMPLE TYPE WIPE
 COMPOSITE YES ✓ NO
 COMPOSITE TYPE _____
 DEPTH OF SAMPLE _____
 WEATHER _____

CONTAINERS USED	AMOUNT COLLECTED
8oz glass jar	1 gauze pad

COMMENTS:

2nd Sample taken from this piece.

WP26 Taken Just Inside Lip.



PREPARED BY: _____

DATE	3	22	88			
TIME	16	45				
PAGE	OF					
PAGE						
PROJECT NO. 305281						

SAMPLE COLLECTION LOG

PROJECT NAME Union Carbide - Linden

SAMPLE NO. D1862

WP 28

SAMPLE LOCATION Comp # 3 platform, Post Clean

SAMPLE TYPE WIPE

COMPOSITE YES ☒ NO

COMPOSITE TYPE _____

DEPTH OF SAMPLE _____

WEATHER _____

CONTAINERS
USED

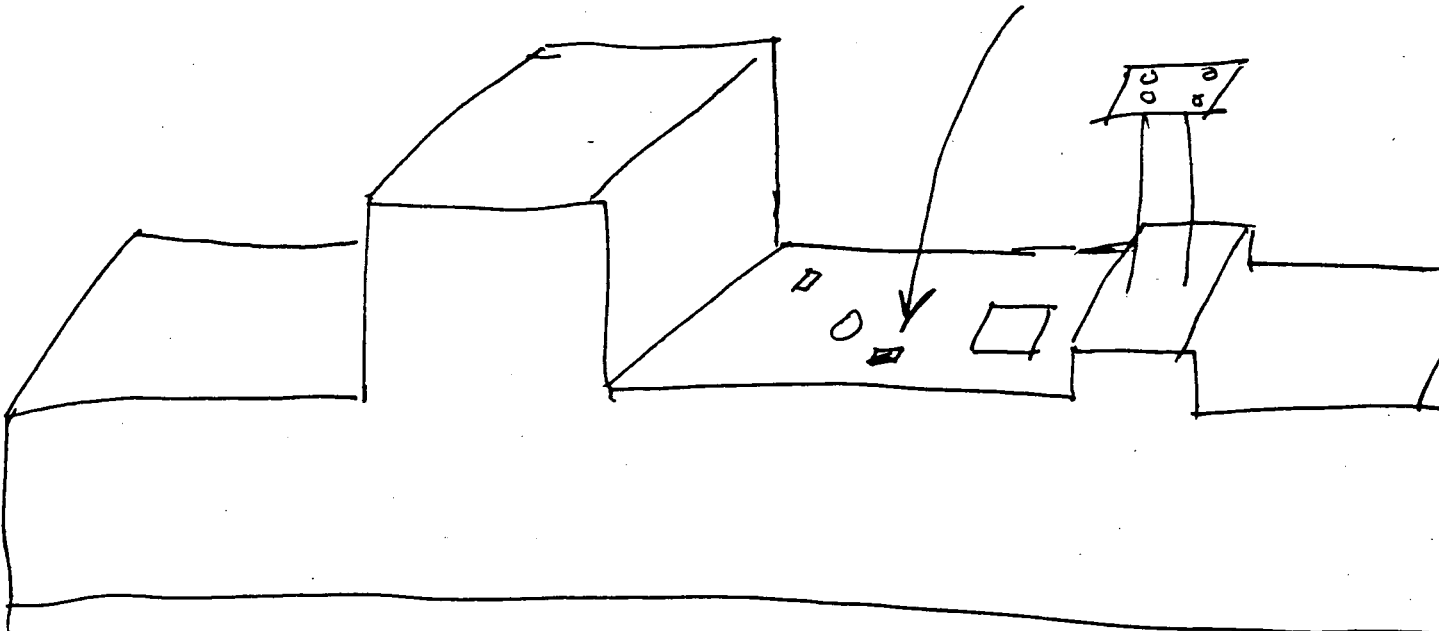
AMOUNT
COLLECTED

8oz glass jar

1 gauze pad

COMMENTS:

WP 27



PREPARED BY: _____

DATE	3	22	88			
TIME	17	05				
PAGE	OF					
PAGE						
PROJECT NO. 305281						

SAMPLE COLLECTION LOG

PROJECT NAME Unim Carbide - Linden

SAMPLE NO. D1864

SAMPLE LOCATION 1000 gallon water storage tank

SAMPLE TYPE water

COMPOSITE YES ☒ NO

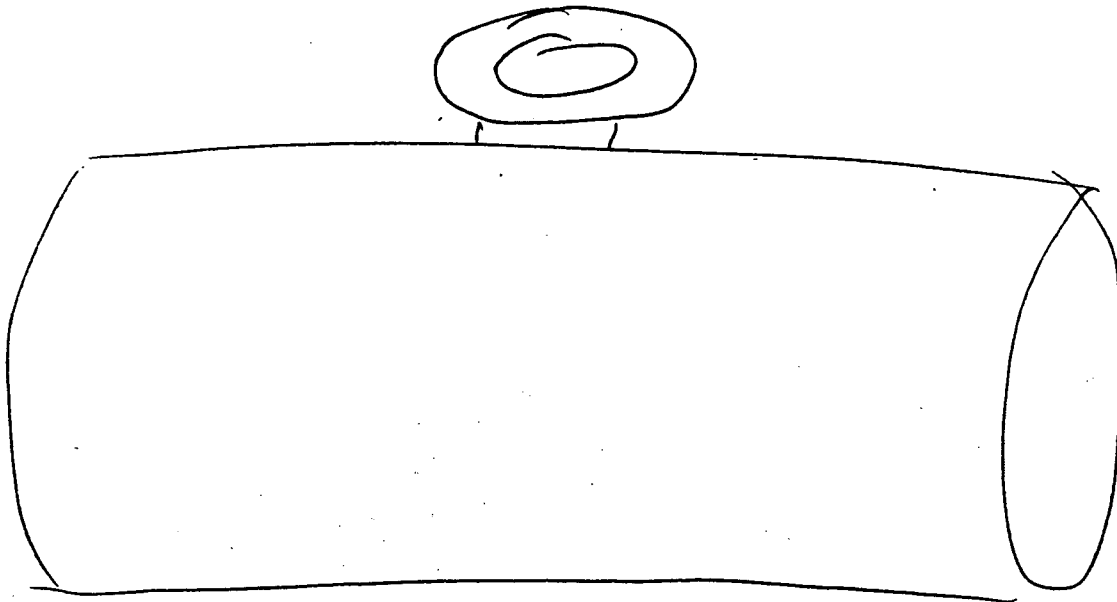
COMPOSITE TYPE water

DEPTH OF SAMPLE _____

WEATHER _____

CONTAINERS USED	AMOUNT COLLECTED
<u>1-1qt glass jar</u>	<u>1 qt.</u>

COMMENTS:



PREPARED BY: _____

DATE	3	22	88		
TIME	17	00			
PAGE	OF				
PAGE					
PROJECT NO. 305281					

SAMPLE COLLECTION LOG

PROJECT NAME Union Carbide Linden

SAMPLE NO. D 1865

SAMPLE LOCATION Field Blank (DI water)

SAMPLE TYPE water

COMPOSITE YES ☒ NO

COMPOSITE TYPE _____

DEPTH OF SAMPLE _____

WEATHER _____

CONTAINERS USED	AMOUNT COLLECTED
1 - 1 qt glass jar	1 qt.

COMMENTS:

DI H_2O The sample jar was filled w/
from the Hudson Sprayer
on site. Then 5 squirts of
10% HNO_3 from the HNO_3 sprayer
were added.

PREPARED BY: _____



41868

REQUEST FOR ANALYSIS

R/A Control No.

C/C Control No. 028674

PROJECT NAME Union Carbide - Linden
PROJECT NUMBER 305291
PROJECT MANAGER Tom Hannon
BILL TO PC 3844 Edison

DATE SAMPLES SHIPPED 3/22/98LAB DESTINATION J.I. Edison

LABORATORY CONTACT _____

SEND LAB REPORT TO _____

PURCHASE ORDER NO. _____

DATE REPORT REQUIRED _____

PROJECT CONTACT _____

PROJECT CONTACT PHONE NO. _____

Sample No.	Sample Type	Sample Volume	Preservative	Requested Testing Program	Special Instructions
D1862	WIFE	1 quart pad		11g	RUSH
D1863	WIFE	(quart) pad		11g	RUSH
D1864	water	1 qt	11N03	11g	RUSH
D1865	water	1 qt	11N03	11g	RUSH

TURNAROUND TIME REQUIRED: (Rush must be approved by the Project Manager.)

Normal _____

Rush ☒

(Subject to rush surcharge)

POSSIBLE HAZARD IDENTIFICATION: (Please indicate if sample(s) are hazardous materials and/or suspected to contain high levels of hazardous substances)

Nonhazardous _____

Flammable _____

Skin Irritant _____

Highly Toxic _____

Other 11g
(Please Specify)

SAMPLE DISPOSAL: (Please indicate disposition of sample following analysis. Lab will charge for packing, shipping, and disposal.)

Return to Client _____

Disposal by Lab _____

FOR LAB USE ONLY

Received By _____

Date/Time _____

WHITE - Original, to accompany samples
YELLOW - Field copy



REQUEST FOR ANALYSIS

R/A Control No. **63375**
C/C Control No. **A 76406**
3/22/88
I. T. Edison

PROJECT NAME Union Carbide - Linden
PROJECT NUMBER 305281
PROJECT MANAGER Tom Hernon
BILL TO PC 3811 Edison

PURCHASE ORDER NO. _____

DATE SAMPLES SHIPPED _____
LAB DESTINATION _____
LABORATORY CONTACT _____
SEND LAB REPORT TO _____

DATE REPORT REQUIRED _____
PROJECT CONTACT _____
PROJECT CONTACT PHONE NO. _____

Sample No.	Sample Type	Sample Volume	Preservative	Requested Testing Program	Special Instructions
D1852	WIPE	1 gauze pad		Hg	Rush
D1853	WIPE	1 gauze pad		Hg	Rush
D1854	WIPE	1 gauze pad		Hg	Rush
D1855	WIPE	1 gauze pad		Hg	Rush
D1856	WIPE	1 gauze pad		Hg	Rush
D1857	WIPE	1 gauze pad		Hg	Rush
D1858	Water	2 x 8oz	HNO ₃	Hg	Rush
D1859	WIPE	1 gauze pad		Hg	Rush
D1860	WIPE	1 gauze pad		Hg	Rush
D1861	WIPE	1 gauze pad		Hg	Rush

TURNAROUND TIME REQUIRED: (Rush must be approved by the Project Manager.)
Normal _____ Rush ☒ (Subject to rush surcharge)
POSSIBLE HAZARD IDENTIFICATION: (Please indicate if sample(s) are hazardous materials and/or suspected to contain high levels of hazardous substances)
Nonhazardous _____ Flammable _____ Skin Irritant _____ Highly Toxic _____

SAMPLE DISPOSAL: (Please indicate disposition of sample following analysis. Lab will charge for packing, shipping, and disposal.)
Return to Client _____ Disposal by Lab _____

FOR LAB USE ONLY

Received By _____

Date/Time _____

Other Hg
(Please Specify)

WHITE - Original, to accompany samples
YELLOW - Field copy

CHAIN-OF-CUSTODY RECORD

R/A Control No. 63375

C/C Control No. A 76406

PROJECT NAME/NUMBER Union Carbide - Linden - 305281

LAB DESTINATION ITT Edison

SAMPLE TEAM MEMBERS Jacques Hill

CARRIER/WAYBILL NO. _____

Sample Number	Sample Location and Description	Date and Time Collected	Sample Type	Container Type	Condition on Receipt (Name and Date)	Disposal Record No.
D1852	Comp #1, Intake Valve Cover Post Clean WP18	3/22/98 14:50	WIPE	8oz glass jar		
D1853	Field Blank WP19	3/22/98 15:05	WIPE	8oz glass jar		
D1854	Comp #3, 3rd Stage Piston Post Clean WP20	3/22/98 15:15	WIPE	8oz glass jar		
D1855	Comp #3, 1st Stage Cylinder Post Clean WP21	3/22/98 15:25	WIPE	8oz glass jar		
D1856	Comp #3, 2nd Stage Cylinder Post Clean WP22	3/22/98 15:35	WIPE	8oz glass jar		
D1857	Comp #3, 4th Stage Cylinder Post Clean WP23	3/22/98 15:50	WIPE	8oz glass jar		
D1858	Comp #3, Water in Small inner cooler Post Clean WP24	3/22/98 16:00	Water	1qt glass jar		
D1859	Comp #3, Small inner cooler Post Clean WP25	3/22/98 16:14	WIPE	8oz glass jar		
D1860	Comp #3, Cooler heat exchanger Post Clean WP26	3/22/98 16:30	WIPE	8oz glass jar		
D1861	Comp #3, Upper Heat exchanger Post Clean WP27	3/22/98 16:35	WIPE	8oz glass jar		

Special Instructions: RUSH 24 Hr. Turn around

Possible Sample Hazards: Mercury

SIGNATURES: (Name, Company, Date and Time)

1. Relinquished By: Jacques Hill 3/22 18:35

Received By: Gregory L. Hill 3/22/98 18:35

2. Relinquished By: _____

Received By: _____

3. Relinquished By: _____

Received by: _____

4. Relinquished By: _____

Received By: _____



INTERNATIONAL
TECHNOLOGY
CORPORATION

CHAIN-OF-CUSTODY RECORD

R/A Control No. 41868

C/C Control No. 028674

PROJECT NAME/NUMBER Union Carbide - Linden 305281

LAB DESTINATION I.T. Edison

SAMPLE TEAM MEMBERS Jack Hill

CARRIER/WAYBILL NO. _____

Sample Number	Sample Location and Description	Date and Time Collected	Sample Type	Container Type	Condition on Receipt (Name and Date)	Disposal Record No.
D1862	Wipe Comp #3 pit form WP28 ^{Inst Clean}	3/22/88 1645	wipe	502 glass		
D1863	WP29 Comp #1 intake valve cover ^{Inst Clean}	3/22/88 1648	wipe	502 glass		
D1864	1000 gal water storage tank	3/22/88 1705	water	197 glass ^{mo}		
D1865	Field Blank	3/22/88 1710	water	197 glass		

COPY

Special Instructions: _____

Possible Sample Hazards: _____

SIGNATURES: (Name, Company, Date and Time)

1. Relinquished By: Jacques H Hill ^{3/22} 1835

Received By: Michael J Fisher 3/22/88 1835

2. Relinquished By: _____

Received By: _____

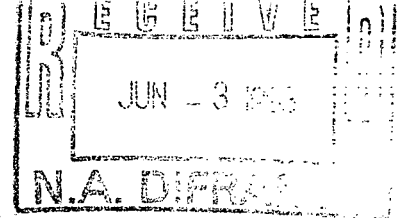
3. Relinquished By: _____

Received by: _____

4. Relinquished By: _____

Received By: _____

PRAXAIR, INC.
Law Department
39 Old Ridgebury Road
Danbury, CT 06810-5113



Richard G. Tisch
Group Counsel
Safety, Health & Environment

Phone: (203) 794-6584
Fax: (203) 794-7057

May 27, 1993

VIA OVERNIGHT MAIL

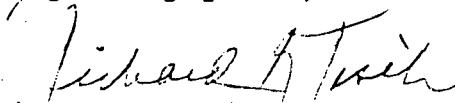
John R. Erickson, Esq.
Cohen, Shapiro, Polisher,
Shiekman and Cohen
Princeton Pike Corporate Center
1009 Lenox Drive - Bldg. Four
Lawrenceville, NJ 08648

Re: Praxair, Inc. Spinoff ECRA ACO
#90367, Linden, New Jersey

Dear John:

I have enclosed for your review and forwarding to the NJDEPE an executed original of ACO # 90367, a Letter of Credit in the amount of \$50,000.00, a Standby Trust Fund, and a Board resolution authorizing Kay Phillips' signing. Please forward as soon as possible to the NJDEPE.

Very truly yours,


Richard G. Tisch

RGT/jm
Enclosures

cc: N. A. DiFranco (w/encls)



State of New Jersey
Department of Environmental Protection and Energy
Division of Responsible Party Site Remediation
CN 028
Trenton, NJ 08625-0028
Tel. # 609-633-7141

Scott A. Weiner
Commissioner

Karl J. Delaney
Director

MAY 3 1993

IN THE MATTER OF
PRAXAIR, INC.

: SECOND AMENDMENT TO
: ADMINISTRATIVE
: CONSENT ORDER

ECRA CASE #90367

The following FINDINGS are made and ORDER is issued pursuant to the authority vested in the Commissioner of the New Jersey Department of Environmental Protection and Energy (hereinafter "NJDEPE") by N.J.S.A. 13:1D-1 et seq. and the Environmental Cleanup Responsibility Act, N.J.S.A. 13:1K-6 et seq., and duly delegated to the Assistant Director for the Industrial Site Evaluation Element within the Division of Responsible Party Site Remediation pursuant to N.J.S.A. 13:1B-4.

FINDINGS

1. Praxair, Inc. (Praxair or Ordered Party) entered into an Administrative Consent Order (ACO) with NJDEPE effective June 30, 1992 (the Praxair ACO), ECRA Case #'s 90254, 92369, 92370, 92372, 92373 and 92336, to allow Praxair to complete a transfer of ownership in the form of a spinoff to the shareholders of Union Carbide Corporation prior to the completion of the standard ECRA administrative process.
2. Linde Gases of the Mid-Atlantic, Inc. ceased operations at the Linden facility in or about June 1990. The Linden facility was not included in the Praxair ACO dated June 30, 1992.
3. Praxair entered into an Amendment to the Praxir ACO with NJDEPE effective September 21, 1992 (Praxair ACO Amendment), ECRA Case #90254, to allow Praxair to sell the real property at the Newark facility to Edward J. Haefeli (Newark Sale). Linde Gases of the Mid-Atlantic ceased operations at the Newark facility on or about July 30, 1990.
4. Based on the above, NJDEPE has determined that the failure of Praxair to include the Linden facility in the Praxair ACO dated June 30, 1992 was a violation of N.J.S.A. 13:1K-9(a) and N.J.A.C. 7:26B-5.1, subjecting Praxair to civil penalties pursuant to N.J.A.C. 7:26B-9.3. In addition, NJDEPE has determined that a non-refundable penalty shall be assessed against Praxair for the failure to comply with ECRA and the regulations.

5. Praxair has requested that NJDEPE prepare an Second Amendment to Praxair ACO to incorporate the Linden facility into the spinoff transaction which was the subject of the June 30, 1992 Praxair ACO and to allow Praxir to settle the outstanding penalties.

ORDER

NOW, THEREFORE, IT IS ORDERED AND AGREED THAT:

6. The provisions of this Second Amendment to the Praxair ACO shall become part of the Praxair ACO. The Praxir ACO as amended, shall remain in full force and effect. The June 30, 1992 Praxair ACO, the Praxair ACO Amendment and this Amendment are hereinafter and collectively referred to as the Praxair ACO.

7. Paragraph 5 of the Praxair ACO shall be amended to read as follows:

C. Industrial Establishment(s)

ECRA Case 90367 SIC #:5169

Facility Name: Linde Gases of the Mid-Atlantic, Inc.

"Linden facility"

Facility Location: Foot of South Wood Avenue
Linden City, Union County

Block: 00587 Lot: 00003

Initial Notice Status: Complete

Owner: LCP Chemicals - New Jersey, a division of Hanlin Group, Inc.

Operator: Linde Gases of the Mid-Atlantic, Inc., a New Jersey corporation.

8. Praxair shall amend the Initial Notice (commonly referred to as ECRA I and II) submitted, ECRA Case #90367, for the Praxair spinoff.

9. Conditions for Financial Assurance

- A. The Ordered Party(ies) shall obtain and provide to NJDEPE financial assurance in a form acceptable to NJDEPE in the amount of \$50,000.00 for the Linden facility. The financial assurance must conform with the requirements of N.J.S.A. 13:1K-9(b)3, N.J.A.C. 7:26B-6, and this ACO. This financial assurance shall be submitted to NJDEPE along with a fully executed ACO pursuant to Paragraph 15 of this ACO.
- B. The Ordered Party(ies) shall establish and submit to NJDEPE a standby trust fund within five (5) days from the effective date of this ACO.

The financial institution which issues the financial assurance shall agree to promptly and directly deposit all amounts up to the total value of the financial assurance into the standby trust fund upon demand by NJDEPE.

- C. Upon NJDEPE approval of a Cleanup Plan for the Linden facility, the Ordered Party(ies) shall amend the amount of the financial assurance, specified in Paragraph 9.A above, to equal the estimated cost of implementation of the approved Cleanup Plan, or shall provide such other financial assurance as may be approved by NJDEPE in an amount equal to the estimated cost of implementation of the approved Cleanup Plan.
 - D. In the event that NJDEPE determines that the Ordered Party(ies) has failed to perform any of its obligations under this ACO or ECRA at the Linden facility, NJDEPE may draw on the financial assurance; provided, however, that before any such demand is made, NJDEPE shall notify the Ordered Party(ies) in writing of the obligation(s) with which it has not complied, and the Ordered Party(ies) shall have reasonable time, not to exceed fourteen (14) days, to perform such obligation(s) to NJDEPE's satisfaction. Nothing in this paragraph shall prevent NJDEPE from collecting stipulated penalties pursuant to the terms of this ACO for cause.
 - E. Upon NJDEPE's written approval of a Negative Declaration(s) for the Linden facility, the Ordered Party(ies) shall be relieved of any further obligation to maintain in full force and effect the financial assurance required by this ACO for the Industrial Establishment(s) which is the subject of the NJDEPE-approved Negative Declaration(s). Upon NJDEPE's written approval of the completion of any cleanup required by this ACO, as verified by final site inspection(s) pursuant to N.J.A.C. 7:26B-5.7, and upon the Ordered Party(ies)'s satisfaction of all financial obligations in connection therewith, the Ordered Party(ies) shall be relieved of any further obligation to maintain in full force and effect the financial assurance required by this ACO for the facility at which the approved cleanup has been completed.
- 10. Praxair agrees not to contest the authority or jurisdiction of the Department to issue this Amendment. The Ordered Party(ies) further agrees not to contest the terms or conditions of this Amendment except as to interpretation or application of such terms and conditions in any action brought by the NJDEPE to enforce the provisions of this Amendment.
 - 11. Any signatory to this Amendment, who is executing this Amendment on behalf of an entity other than that individual, shall provide to NJDEPE appropriate documentary evidence as specified in N.J.A.C. 7:26B-1.13 authorizing the signatory to bind the entity to the provisions of this Amendment. This documentary evidence shall be submitted to NJDEPE along with this executed Amendment.
 - 12. Any Ordered Party to this Amendment shall provide to NJDEPE at least thirty (30) days prior written notice of the dissolution of its corporate

identity or liquidation of its assets, and shall provide immediate written notice to NJDEPE of filing of a petition for bankruptcy no later than the day after filing. Upon receipt of notice of dissolution of corporate identity, liquidation of assets or filing of a petition for bankruptcy, NJDEPE may request and within fourteen (14) days of NJDEPE's written request an Ordered Party shall obtain and submit to NJDEPE, additional financial assurance pursuant to this Amendment.

13. Except as otherwise set forth herein, by the execution of this Amendment the Department does not release any person from any liabilities or obligations such person may have pursuant to ECRA and the Regulations, or any other applicable authority, nor does the NJDEPE waive any of its' rights or remedies pursuant thereto.
14. By letter dated April 21, 1993, Praxair submitted a payment of \$3500.00 in settlement of the penalty assessment for the administrative violations of ECRA alleged by NJDEPE as referenced in Paragraph 4 of this Amendment. Praxair's submission of the above referenced penalty payment does not constitute an admission of liability or any admission or waiver by Praxair regarding the law, facts and circumstances surrounding the subject of this Amendment. Payment of this penalty shall not relieve Praxair of its obligation to fully comply with the Praxair ACO. Furthermore, NJDEPE's acceptance of the penalty shall not be construed as a waiver of NJDEPE's right to compel Praxair to specifically perform their obligations under this ACO.
15. This Amendment shall take effect upon the execution of this Amendment by the parties. This Amendment shall be null and void unless the Praxair submits this signed Amendment to NJDEPE within thirty (30) days of signing of this Amendment by NJDEPE. Praxair shall submit a fully executed Amendment to NJDEPE within five (5) business days from the effective date.

NEW JERSEY DEPARTMENT OF
ENVIRONMENTAL PROTECTION AND ENERGY

Date: 4/30/93

By: 

KENNETH T. HART, ASSISTANT DIRECTOR
INDUSTRIAL SITE EVALUATION ELEMENT

PRAXAIR, INC.
("ORDERED PARTY")

Date: 5/15/93

By: 

Name: S. Kay Phillips

Title: Vice President - Safety
& Environmental Services

I, ROBERT A. BASSETT, Assistant Secretary of PRAXAIR, INC., a corporation organized and existing under the laws of the State of Delaware, DO HEREBY CERTIFY that the following is a true and correct copy of resolutions duly adopted by the Board of Directors of said Corporation in a Unanimous Consent of Directors dated June 24, 1992.

RESOLVED, that the general enabling resolutions adopted by the Board on November 8, 1988 are amended and restated in their entirety as follows:

"RESOLVED, that the Chairman, the Chief Executive Officer, the President, any Vice-President, the Chief Financial Officer, the Treasurer, the Secretary, any Assistant Treasurer or any Assistant Secretary of the Corporation is authorized, in the name and on behalf of the Corporation, to execute and deliver any contract, agreement or document, to enter into any commitment or obligation, or to take or do or cause to be taken or done any action or thing, for the conduct of the business of the Corporation in the ordinary course thereof; and be it further

RESOLVED, that the Chief Executive Officer or the President of the Corporation is authorized to appoint executives of a business, division or department of the Corporation, to designate their titles, to fix their compensation, and to prescribe their duties; and be it further

RESOLVED, that the President, or any Vice-President of the Corporation responsible for a business, division or department of the Corporation is authorized to appoint other agents and employees for such component, to designate their titles, if any, to fix their compensation, and to prescribe their duties; and be it further

RESOLVED, that any officer or manager referred to above is authorized to designate in writing one or more employees or representative to do any act or thing which said officer or manager is authorized to do pursuant to the foregoing resolutions; and be it further

RESOLVED, that any person dealing with the Corporation may conclusively rely on a certificate from the Secretary or an Assistant Secretary of the Corporation or on an opinion from an attorney employed by or otherwise representing the Corporation that an officer, manager or other person is authorized to act for the Corporation in a particular matter."

IN WITNESS WHEREOF, I have hereunto set my hand and caused the corporate seal of said PRAXAIR, INC. to be hereto affixed this 19th day of May 1993.


Assistant Secretary

STANDBY TRUST AGREEMENT

Re: Environmental Cleanup Responsibility Act

This Standby Trust Agreement, hereinafter "Agreement", entered into as of this 25th day of May, 1993 by and between Praxair, Inc., having its principal place of business at 39 Old Ridgebury Road, Danbury, CT 06817, a Delaware corporation, hereinafter "Grantor", and The Bank of New York, a New York banking corporation, having its principal offices at 101 Barclay Street, New York, NY 10286, hereinafter "Trustee".

WHEREAS, the New Jersey Department of Environmental Protection, hereinafter "NJDEP", an agency of the State of New Jersey has established the Environmental Cleanup Responsibility Act Regulations, N.J.A.C. 7:26B, pursuant to the Environmental Cleanup Responsibility Act, N.J.S.A. 13:1K-6, et seq., hereinafter "ECRA", applicable to the Grantor, requiring that certain procedures be followed by industrial establishments to ensure adequate preparation and implementation of acceptable cleanup procedures as a precondition of any closure or sale or transfer of any industrial establishment in accordance with ECRA.

WHEREAS, Grantor has entered into an Administrative Consent Order with NJDEP dated May 25, 1993, hereinafter "Administrative Consent Order" (Annexed hereto as Exhibit A), under which Grantor has agreed, among other things, to undertake certain actions in order to comply with ECRA with respect to the industrial establishment described above:

WHEREAS, the Grantor is required within fourteen (14) days of written approval of the ECRA cleanup plan by NJDEP to provide a surety bond or other financial security pursuant to N.J.A.C. 7:26B-6 in an amount equal to or greater than the cost of said approved cleanup plan;

WHEREAS, the Grantor, acting through its duly authorized officer or management official, has selected the Trustee to be the trustee under this Agreement, and the Trustee is willing to act as trustee;

NOW, THEREFORE, the Grantor and the Trustee agree as follows:

Section 1. Definitions.

As used in this Agreement:

(a) The term "Grantor" means the owner or operator of the industrial establishment entering into this Agreement and any successors or assigns of the Grantor.

(b) The term "Trustee" means the Trustee who enters into the Agreement and any successor Trustee.

Section 2. Identification of Industrial Establishment and Cost Estimates.

This Agreement pertains to the industrial establishments and cost estimates identified on Attachment A.

Section 3. Establishment of Fund.

The Grantor and the Trustee hereby establish a trust fund, hereinafter the "Fund", for the benefit of NJDEP. The Grantor and the Trustee intend that no third party shall have access to the Fund except as herein provided. The Fund is established initially as consisting of the total sum of \$0, which is acceptable to the Trustee and NJDEP. Such property and any other property subsequent transferred to the Trustee is referred to as the Fund, together with all earnings and profits thereon, less any payments or distributions made by the Trustee pursuant to this Agreement. The Fund shall be held by the Trustee, IN TRUST, as hereinafter provided. The Trustee shall

not be responsible nor shall it undertake any responsibility for the amount or adequacy of, nor any duty to collect from the Grantor, any payments necessary to discharge any liabilities of the Grantor established by the NJDEP.

Section 4. Payment for ECRA Cleanup.

The Trustee shall make payment for the Fund as the NJDEP Commissioner, or his designee, shall direct, in writing, to provide for the payment of the ECRA cleanup costs of the industrial establishment pursuant to the Administrative Consent Order annexed as Exhibit A dated May 25, 1993 and this Agreement. The Trustee shall reimburse the Grantor or other persons, as specified by the NJDEP, from the Fund for ECRA cleanup expenditures in such amounts as the NJDEP shall direct in writing. In addition, the Trustee shall refund to the Grantor such amounts as the NJDEP specifies in writing. Upon refund such funds shall no longer constitute part of the Fund as defined herein.

Section 5. Payments Comprising the Fund.

Payments made to the Trustee for the Fund shall consist of cash or securities acceptable to the Trustee.

Section 6. Trustee Management.

At such time as the corpus of the Fund is funded, the Trustee shall invest and reinvest the principal and income of the Fund and keep the Fund invested as a single fund, without distinction between principal and income, in accordance with general investment policies and guidelines which the Grantor may communicate in writing to the Trustee from time to time, subject, however, to the provisions of this Section. In investing, reinvesting, exchanging,

selling and managing the Fund, the Trustee shall discharge his duties with respect to the Fund solely in the interest of the NJDEP as the beneficiary and with care, skill, prudence and diligence under the circumstances then prevailing which persons of prudence, acting in a like capacity and familiar with such matters, would use in the conduct of an enterprise of a like character and with like aims; except that:

(i) Securities or other obligations of the Grantor, or any other owner or operator of the facilities or any of their affiliates, as defined in the Investment Company Act of 1940, as amended, 15 U.S.C. 80a-2(a), shall not be acquired or held, unless they are securities or other obligations of the Federal or a state government;

(ii) The Trustee is authorized to invest the Fund in time or demand deposits of the Trustee, to the extent insured by an agency of the Federal or State government; and

(iii) The Trustee is authorized to hold cash awaiting investment of distribution uninvested for a reasonable time and without liability for the payment of interest thereon.

Section 7. Commingling and Investment.

The Trustee is expressly authorized in its discretion:

(a) To transfer from time to time any or all of the assets of the Fund to any common, commingled or collective trust fund created by the Trustee in which the Fund is eligible to participate, subject to all of the provisions thereof, to be commingled with the assets of other trusts participating therein; and

(b) To purchase shares in any investment company registered under the Investment Company Act of 1940, 15 U.S.C. 80a-1 et seq., including one which may be created, managed, underwritten, or to which investment advice is rendered or the shares of which are sold by the Trustee. The Trustee may vote such shares in its discretion.

Section 8. Express Powers of Trustee.

Without in any way limiting the powers and discretions conferred upon the Trustee by the other provisions of this Agreement or by law, the Trustee is expressly authorized and empowered:

(a) To sell, exchange, convey, transfer or otherwise dispose of any property held by it, by public or private sale. No person dealing with the Trustee shall be bound to see to the application of the purchase money or to inquire into the validity or expedience of any such sale or other disposition;

(b) To make, execute, acknowledge and deliver any and all documents of transfer and conveyance and any and all other instruments that may be necessary or appropriate to carry out the powers herein granted;

(c) To register any securities held in the Fund in its own name or in the name of a nominee and to hold any security in bearer form or in book entry, or to combine certificates representing such securities with certificates of the same issue held by the Trustee in other fiduciary capacities, or to deposit or arrange for the deposit of such securities in a qualified central depository even though, when so deposited, such securities may be merged and held in bulk in the name of the nominee of such depository with other securities deposited therein by another person or to deposit or arrange for the deposit of any securities issued by the Federal Government of

the United States, or any agency or instrumentality thereof, with a Federal Reserve bank, but the books and records of the Trustee shall at all times show that all securities are part of the Fund;

(d) To deposit any cash in the Fund in interest-bearing accounts maintained or savings certificates issued by the Trustee, in its separate corporate capacity, or in any other banking institution affiliated with the Trustee, to the extent insured by an agency of the Federal or State government; and

(e) To compromise or otherwise adjust all claims in favor of or against the Fund.

Section 9. Taxes and Expenses.

All taxes of any kind that may be assessed or levied against or in respect of the Fund and all brokerage commissions incurred by the Fund shall be paid from the Fund. All other expenses incurred by the Trustee in connection with the administration of this Trust, including fees for legal services rendered to the Trustee, the compensation of the Trustee to the extent not paid directly by the Grantor and all other proper charges and disbursements of the Trustee shall be paid from the Fund.

Section 10. Annual Valuation.

The Trustee shall annually, at least 30 days prior to the anniversary date of establishment of the Fund, furnish to the Grantor and to the NJDEP a statement confirming the value of the Trust. Any securities in the Fund shall be valued at the market value as of no more than 60 days prior to the anniversary date of establishment of the Fund. The failure of the Grantor to object in writing to the Trustee within 90 days after the statement has been

furnished to the Grantor and the NJDEP shall constitute a conclusively binding assent by the Grantor, barring the Grantor from asserting any claim or liability against the Trustee with respect to matters disclosed in the statement.

Section 11. Advice of Counsel.

The Trustee may from time to time consult with counsel, who may be counsel to the Grantor, with respect to any question arising as to the construction of this Agreement or any action to be taken hereunder. The Trustee shall be fully protected, to the extent permitted by law, in acting upon the advice of counsel.

Section 12. Trustee Compensation.

The Trustee shall be entitled to reasonable compensation from time to time for its services, as agreed upon in writing with the Grantor.

Section 13. Successor Trustees.

The Trustee may resign or the Grantor may replace the Trustee, but such resignation or replacement shall not be effective until the Grantor has appointed a successor trustee and this successor accepts the appointment. The successor trustee shall have the same powers and duties as those conferred upon the Trustee hereunder. Upon the successor trustee's acceptance of the appointment, the Trustee shall assign, transfer and pay over property constituting the Fund. If for any reason, the Grantor cannot or does not act in the event of the resignation of the Trustee, the Trustee may apply to a court of competent jurisdiction for the appointment of a successor trustee or for instructions. The successor trustee shall specify the date on which it assumes administration of the trust in writing sent to the Grantor, the NJDEP

and the present Trustee by certified mail 10 days before such change becomes effective. Any expenses incurred by the Trustee as a result of any of the acts contemplated by this Section shall be paid as provided in Section 9.

Section 14. Successor Grantor.

Sixty (60) days prior to Grantor ceasing to exist if dissolution is contemplated, the Grantor must notify and provide NJDEP and the Trustee with the names and addresses of any and all successors and assigns along with a notarized acknowledgment from same stating that the successors and assigns assume responsibilities concerning financial assurance.

Section 15. Instructions to Trustee.

All orders, requests and instructions by the Grantor to the Trustee shall be in writing, signed by such persons as are designated in Attachment B or such other designees as the Grantor may designate by amendment to Attachment B. The Trustee shall be fully protected in acting without inquiry in accordance with the Grantor's orders, requests and instructions. All orders, requests and instructions by the NJDEP to the Trustee shall be in writing, signed by the NJDEP Commissioner or his/her designee and the Trustee shall act and shall be fully protected in acting in accordance with such orders, requests and instructions. The Trustee shall have the right to assume, in the absence of written notice to the contrary, that no event constituting a change or a termination of the authority of any person to act on behalf of the Grantor or NJDEP hereunder has occurred.

The Trustee shall have no duty to act in the absence of such orders, requests and instructions from the Grantor and/or NJDEP, except as provided for herein.

Section 16. Amendment of Agreement.

This Agreement may be amended by an instrument in writing executed jointly by the Grantor or the Grantor's principals, successors and assigns, if the Grantor has dissolved, the Trustee and NJDEP or by the Trustee and the NJDEP if the Grantor ceases to exist, and no successors or assigns are named.

Section 17. Irrevocability and Termination.

Subject to the right of the parties to amend this Agreement, as provided in Section 16, this Trust shall be irrevocable and shall continue until terminated by the written agreement of the Grantor, the Trustee and the NJDEP or of the Trustee and the NJDEP, if the Grantor ceases to exist. Upon termination of the Trust, all remaining trust property, less final trust administration expenses, shall be delivered to the Grantor.

Section 18. Immunity and Indemnification.

The Trustee shall not incur personal liability of any nature in connection with any acts or omissions, made in good faith, in the administration of this Trust or in carrying out any directions by the Grantor or the NJDEP issued in accordance with this Agreement. The Trustee shall be indemnified and saved harmless by the Grantor or from the Trust Fund, or both, from and against any personal liability to which the Trustee may be subjected by reason of any act or conduct in its official capacity, including all expenses reasonably incurred in its defense in the event the Grantor fails to provide such defense.

Section 19. Choice of Law.

This Agreement shall be administered, construed and enforced according to the laws of the State of New Jersey.

Section 20. Interpretation.

As used in this Agreement, words in the singular include the plural and words in the plural include the singular.

The descriptive headings for each Section of this Agreement shall not affect the interpretation or the legal efficacy of this Agreement.

IN WITNESS WHEREOF the parties have caused this Agreement to be executed by their respective authorized officer or management officials, duly authorized, and their corporate seals to be hereunto affixed and attested, as of the date set forth below.

THE BANK OF NEW YORK,
as Trustee

Date: May 25, 1993

By: Kathleen Jones
Name: KATHLEEN JONES
Title: Assistant Vice President

PRAXAIR, INC.
as Grantor

Date: 5/25/93

By: A. K. Phillips
Name: S. Kay Phillips
Title: Vice President - Safety
& Environmental Services

ATTACHMENT A

ECRA Case #90367 SIC #:5169 Financial Assurance: \$50,000.00

Facility Name: Linde Gases of the Mid-Atlantic, Inc.
 "Linden Facility"

Facility Location: Foot of South Wood Avenue
 Linden City, Union County
 Block: 00587 Lots 00003

Initial Notice Status: Complete

Owner: LCP Chemicals - New Jersey, a division of Hanlin Group, Inc.
Operator: Linde Gases of the Mid-Atlantic Inc., a New Jersey Corporation

ATTACHMENT B

All orders, requests and instructions by the Grantor to the Trustee shall be in writing, signed by one of the following designated persons of the Grantor:

S. Kay Phillips

V.P. Safety and Environmental Services

J.A. Clerico

Treasurer

1
THE
BANK OF
NEW
YORK

LETTER OF CREDIT DEPARTMENT
CHURCH ST. STATION
P.O. BOX 11238
NEW YORK, N.Y. 10286-1238

OUR REF. NO.
S00028873

DATE
MAY 26 1993

BENEFICIARY
SCOTT A. WEINER, COMMISSIONER
NEW JERSEY DEPARTMENT OF
ENVIRONMENTAL PROTECTION AND ENERGY
CN 028, TRENTON, NJ 08625-0028

APPLICANT
PRAXAIR, INC.
39 OLD RIDGEBURY ROAD
DANBURY, CT. 06810-5113

GENTLEMEN/LADIES:

OUR REFERENCE NO. S00028873

1
ACCOUNT OF:
PRAXAIR, INC.
39 OLD RIDGEBURY ROAD
DANBURY, CT. 06810-5113

AVAILABLE WITH: OURSELVES
 BY PAYMENT

DRAFTS AT SIGHT
DRAWN ON THE BANK OF NEW YORK, NEW
YORK, NEW YORK, AS INDICATED BELOW

TO THE EXTENT OF: ***USD50,000.00***

EXPIRY DATE: JUNE 01 1994
PLACE OF EXPIRY: OUR COUNTERS

ADDITIONAL DETAILS:

1
BENEFICIARY:
SCOTT A. WEINER, COMMISSIONER
NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
AND ENERGY
CN 028
TRENTON, NEW JERSEY 08625-0028

ATTN: ASSISTANT DIRECTOR, INDUSTRIAL SITE EVALUATION ELEMENT.

RE: ENVIRONMENTAL CLEANUP RESPONSIBILITY ACT, ECRA CASE #90367
=====

IRREVOCABLE LETTER OF CREDIT NO. S00028873

DEAR SIR OR MADAM:

WE HEREBY ESTABLISH OUR IRREVOCABLE STANDBY LETTER OF CREDIT NO.
S00028873 IN YOUR FAVOR AT THE REQUEST AND FOR THE ACCOUNT OF
PRAXAIR, INC., 39 OLD RIDGEBURY ROAD, DANBURY, CT 06810-5113 UP
TO THE AGGREGATE AMOUNT OF FIFTY THOUSAND DOLLARS AND ZERO

- CONTINUED ON NEXT PAGE -

1
THE
BANK OF
NEW
YORK

LETTER OF CREDIT DEPARTMENT
CHURCH ST. STATION
P.O. BOX 11238
NEW YORK, N.Y. 10286-1238

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OUR LETTER OF CREDIT S00028873
PRAXAIR, INC.

CENTS U.S. DOLLARS, \$50,000.00, AVAILABLE UPON PRESENTATION BY YOU OF (1) YOUR SIGHT DRAFT, BEARING REFERENCE TO THIS IRREVOCABLE STANDBY LETTER OF CREDIT NO. S00028873, AND (2) YOUR SIGNED STATEMENT READING AS FOLLOWS:

"I CERTIFY THAT THE AMOUNT OF THE DRAFT IS PAYABLE PURSUANT TO THE AUTHORITY OF THE ENVIRONMENTAL CLEANUP RESPONSIBILITY ACT, N.J.S.A. 13:1K-6 ET SEQ (P.L. 1983, C.330) ("ECRA") AND THE ECRA REGULATIONS, N.J.A.C. 7:26B."

1
THIS LETTER OF CREDIT IS EFFECTIVE AS OF JUNE 1, 1993, AND SHALL EXPIRE ON JUNE 1, 1994, BUT SUCH EXPIRATION DATE SHALL BE AUTOMATICALLY EXTENDED FOR A PERIOD OF AT LEAST ONE (1) YEAR ON JUNE 1, 1994 AND ON EACH SUCCESSIVE EXPIRATION DATE, UNLESS, AT LEAST 120 DAYS BEFORE THE CURRENT EXPIRATION DATE, WE NOTIFY BOTH NJDEP'S INDUSTRIAL SITE EVALUATION ELEMENT, CN-028, TRENTON, NEW JERSEY 08625 AND PRAXAIR, INC. BY CERTIFIED MAIL THAT WE HAVE DECIDED NOT TO EXTEND THIS LETTER OF CREDIT BEYOND THE CURRENT EXPIRATION DATE. IN THE EVENT YOU ARE SO NOTIFIED, ANY UNUSED PORTION OF THE CREDIT SHALL BE AVAILABLE UPON PRESENTATION OF YOUR SIGHT DRAFT FOR 120 DAYS AFTER DATE OF RECEIPT BY BOTH NJDEP AND PRAXAIR, INC., AS SHOWN ON THE SIGNED RETURN RECEIPTS.

WHENEVER THIS LETTER OF CREDIT IS DRAWN ON UNDER AND IN COMPLIANCE WITH THE TERMS OF THIS LETTER OF CREDIT, WE SHALL DULY HONOR SUCH DRAFT UPON PRESENTATION TO US, AND WE SHALL DEPOSIT THE AMOUNT OF THE DRAFT DIRECTLY INTO THE STANDBY TRUST FUND OF PRAXAIR, INC. IN ACCORDANCE WITH YOUR INSTRUCTIONS.

1
WE CERTIFY THAT THE WORDING OF THIS LETTER OF CREDIT IS IDENTICAL TO THE WORDING SPECIFIED IN N.J.A.C. 7:26B (APPENDIX A), AS SUCH REGULATIONS WERE CONSTITUTED ON THE DATE SHOWN IMMEDIATELY BELOW.

THE BANK OF NEW YORK SHALL NOT CANCEL THIS LETTER OF CREDIT ON THE BASIS OF A REQUEST FROM PRAXAIR, INC. UNTIL IT HAS RECEIVED WRITTEN AUTHORIZATION FROM NJDEP.

THIS IRREVOCABLE STANDBY LETTER OF CREDIT IS SUBJECT TO "THE UNIFORM COMMERCIAL CODE".

DATE: MAY 26, 1993.

- CONTINUED ON NEXT PAGE -

TRN DCM 930526-5707100 BMSL PSN 90931 5617P124

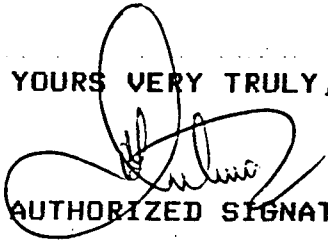
1
THE
BANK OF
NEW
YORK

LETTER OF CREDIT DEPARTMENT
CHURCH ST. STATION
P.O. BOX 11238
NEW YORK, N.Y. 10286-1238

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OUR LETTER OF CREDIT S00028873
PRAXAIR, INC.

YOURS VERY TRULY,


AUTHORIZED SIGNATURE

CHECK ONE:

☐ RELEASE MEMORANDUM☐ REQUEST FOR MATERIALS

TYPE OF ORDER: <input type="checkbox"/> PO <input type="checkbox"/> CMO <input type="checkbox"/> CHANGE NOTICE <input type="checkbox"/> BLANKET <input type="checkbox"/> RELEASE <input type="checkbox"/> OTHER <input type="checkbox"/> ACTION DATE		PLANT NUMBER 905	DATE REQUIRED ASAP-Emergency	REQUESTED BY A. A. Galvan	SHIP TO PLANT UNION CARBIDE CORPORATION LINDE DIVISION South Wood Ave. PO Box 425 Linden, NJ 07036
RFM NUMBER 33431	RFM DATE Oct. 21, 1987	PRIORITY 1	BUYER	APPROVED BY (NAME) A. A. Galvan APPROVED BY (SIGNATURE) <i>[Signature]</i>	
SUGGESTED VENDOR International Technology Corp. 165 Fieldcrest Ave. Edison, NJ 08837		CLIC		CLIC	

VENDOR SHIP DATE	F.O.B. <input type="checkbox"/> SHIPPING POINT <input type="checkbox"/> DESTINATION <input type="checkbox"/> OTHER	TRANSPORTATION <input type="checkbox"/> ACCT. OF BUYER <input type="checkbox"/> ACCT. OF SELLER <input type="checkbox"/> OTHER
COMM CODE-CFAR-SUF	SHIP VIA <input type="checkbox"/> PARCEL POST <input type="checkbox"/> TRUCK <input type="checkbox"/> UPS <input type="checkbox"/> RAIL <input type="checkbox"/> AIR FRT <input type="checkbox"/> OTHER	TERMS OF PAYMENT <input type="checkbox"/> NET 30 <input type="checkbox"/> % DISC 10 DAYS <input type="checkbox"/> % 10TH PROX <input type="checkbox"/> OTHER

ITEM	QUANTITY ORDERED	QUANTITY RECEIVED	U/M	PART NUMBER	DESCRIPTION	UNIT PRICE	AMOUNT
					Clean up an oil spill which does contain traces of mercury (26 PPM) located on the east side of our plant building by a concrete pad which is used as an oil collection point.		
					Contractor will be required to remove all visible traces of oil from the affected area using a one foot buffer zone and down to visible traces of oil plus 12 inches. The area is to be back-filled with clean fill material. All material removed will be collected and sampled. Material to be removed from the plant site. All samples to be turned over to UCC properly labeled in sealed containers. No testing required.		
					All soil to be disposed of will be in an EPA and UCC approved land fill		

SUBJECT TO STATE/LOCAL SALES USE TAX

<input type="checkbox"/> YES-STATE	% LOCAL	% OTHER
<input type="checkbox"/> ALL	<input type="checkbox"/> LABOR ONLY	<input type="checkbox"/> MATERIAL ONLY
<input type="checkbox"/> NO - EXEMPTION NUMBER		
<input type="checkbox"/> TEXAS - SEE SPECIAL INSTRUCTIONS		

MAIL INVOICE TO LOCATION
SPECIFIED IN CONTRACT.

RECEIVED BY

CONTRACTOR'S ACCEPTANCE

ORDER SUPERCEDES ORAL ORDER OF

9/2/85

DATE

WITH

VENDOR

VENDOR REPRESENTATIVE

DO NOT DUPLICATE

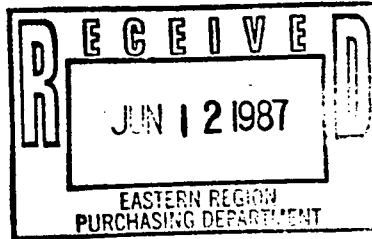
DATE



INTERNATIONAL
TECHNOLOGY
CORPORATION

June 11, 1987

Ms. Judy Merriman
Union Carbide Corporation
Linde Division
308 Harper Drive
Morrestown, NJ 08057



Dear Ms. Merriman:

Re: Union Carbide Linde Roof & Pad Sampling Project E01072 S1

We are pleased to submit the attached proposal and cost estimate for the pre-sampling of the Linde Division Gas Plant, Main building composite roof and oil drum storage pad area for Mercury residual and PCB, respectively.

We thank you for this opportunity to quote and are available to mobilize and sample within one week of notice to proceed.

If you have any questions, please do not hesitate to contact me.

Sincerely,


Ray E. Lidstrom

REL:mm

Attachment

UNION CARBIDE
ROOF AND PAD SAMPLING PROJECT

1.0 INTRODUCTION

In an effort to define the extent of mercury contamination at the Linde Division gas plant, a site walk was taken by International Technology Corporation (IT) to evaluate the needs of Union Carbide. A sampling plan was derived to fully evaluate two distinct areas. The first area is the rooftop composite coating which historically has shown to contain elemental mercury in small pooled areas. The second area involved a drum storage pad located in the back section of the property where heavy oil staining is evident both on and off the pad areas.

Additional sampling will occur in the interior of the plant subsequent to complete decontamination of the equipment, walls ceiling and floor. The post-remedial sampling will serve to demonstrate the integrity of the decontamination work as well as document the state of cleanliness in the plant interior. The post-remedial sampling costs are not outlined in the cost proposal.

2.0 ROOF COMPOSITE SAMPLING

2
1
10
12
Cores will be taken from the roof composite material at twenty-seven distinct locations. The focus of the sampling project is to evaluate distribution areas, namely, process vents and building vents. In addition, samples will be taken from the vicinity of the roof drains in order to document net transport, if any, of mercurial contamination. Ten discreet cores will be taken from the areas surrounding the process vents protruding throughout the roof area. Twelve cores will be taken from the general vicinity of the plant ventilation stacks and subsequently composited to four samples, based on dividing the roof into four separate sectors.

5
Five samples will be taken from the area surrounding the roof drains. All samples will be discreet in nature.

3.0 DRUM STORAGE PAD AREA - SAMPLING

Initially, a rough chip sample will be taken from the visibly oil stained surface and analyzed for PCB.

Surficial soils will be collected in four locations based on worst-case visual determination. The four soil samples will be composited and analyzed for PCBs. Soils will be collected with a hand trowel previously cleaned to lab grade quality.

4.0 QA/QC

QA/QC samples will be taken throughout the sampling effort. Duplicate samples will be taken at an approximate frequency of 10%, for samples being analyzed for mercury. This will necessitate two duplicate samples for twenty-four samples. Field blanks will be taken daily while travel blanks will be taken as appropriate to accompany sample shipments. The estimated number of field blanks (taken on a daily basis) is three, and the estimated number of travel blanks is one.

All bottles to be used for sample containers will be obtained from I-Chem Research, A Superfund bottle repository. The bottles are thoroughly cleaned to meet USEPA standards.

All distilled/deionized water will be prepared in the IT Corporation laboratory prior to the start of the project.

5.0 DOCUMENTATION

Detailed sample documentation will be maintained by sampling personnel. The primary segment of this is the field notebook which will contain the following site and sampling procedure information.

5.0 DOCUMENTATION (cont'd)

- o Exact sample location
- o Quantity and volume of sample containers
- o Date and time of sampling
- o Type of sample
- o Depth of sample
- o A sketch of the sample location
- o Sample identification numbers
- o A description of the weather
- o The collector's initials

Any conditions pertaining to the sample and location are detailed here as well.

Photographic documentation of each sample will be used to back up the written documentation. The following information about each photograph will be kept in the field notebook:

- o Date, time location, and sequential number in roll of each photograph
- o Directional information
- o Name of the photographer

The person responsible for the samples will fill out a Request For Analysis form designating the requested analytical parameters for each sample. This form also specifies site or case name, date and time of collection, exact sampling location, name of collector, method of preservation and name of person responsible for samples.

The legal record of possession (sample accountability) is established by the Chain of Custody Record. This chain of custody form identifies IT as the entity performing the sampling, lists each sample number and total number of containers per sample, gives a description of each sample, specifies the date and time of the relinquishment of the samples, and is signed by the person who assumes responsibility of the samples.

6.0 DECONTAMINATION

All field sampling equipment will be laboratory cleaned prior to being taken to the field. After equipment is utilized for taking a single sample it will be decontaminated to prevent sample cross-contamination. The following is the decontamination procedure:

1. Wash with non-phosphate detergent and tap water
2. Tap water rinse
3. Laboratory distilled/deionized water rinse
4. Hexane rinse
5. Total air dry or nitrogen blow-dry
6. Laboratory distilled/deionized water rinse

7.0 COST ESTIMATE

LABOR

		<u>\$</u>
1 FAS Coordinator	10 hrs./ @ \$65/each	650.
2 Sampling Technicians	10 hrs./ @ \$35/each x 2	700.
Bottles/Equipment		200.
Travel		120.
Pro Clo		300.
Roof - Analytical Hg (19 samples x \$75/each)		1425.
Composite charge		25.
Pad - Analytical		
PCB chip (1 sample x \$150.)		150.
PCB soil (1 sample x \$150.)		150.
(4-point composite)		
QA/QC	2 Duplicates, 2 Blanks @ \$75/each	300.
Report Preparation	8 hrs./\$90 hr.	720.
	TOTAL	<u>4740.</u>

Schedule

- o IT field crew will mobilize and take the samples within 1 week of notice to proceed.
- o Final report will be issued within 4 weeks of sampling date.

PURCHASE AUTHORIZATION AND SAVINGS RECORD

VENDOR

I.T. Corporation

DIVISION(S) AND LOCATION(S)

Linde - Linde #905

DATE

6/10/87

ORDER OR CONTRACT NO OR DATE OF AGREEMENT

905-

COMMODITY JOB OR SERVICE

Core samples for PCB's and Mercury

COMMODITY CODE

3510RV

PURCHASE IS FOR GOVERNMENT CONTRACT SEE SECTION 15

PLEASE INDICATE YOUR REVIEW AND/OR APPROVAL OF PURCHASE AND FORWARD

DEPARTMENT

NAME

SIGNATURE

DATE

Purchasing Mgr.

MR P.D. MCKENNA

NOTED 7/1/87

Region Dir. Mgr. Klpn.

MR. C. Hoch

[Signature]

4/15/87

Reg Tech Supr

D.E. Kenna

[Signature]

4/15/87

COMMITMENT RESUME

RETURN TO

Purchasing Dept. Merrestown

TOTAL COMMITMENT VALUE:

\$5000.00

TOTAL ESTIMATED SAVINGS:

FIRST YEAR VALUE IF MULTI-YEAR COMMITMENT

FIRST YEAR SAVINGS IF MULTI-YEAR COMMITMENT

CONTRACT PERIOD, SHIPMENT OR DELIVERY DATE

6/30/87

PURCHASE AUTHORITY

- ☐ REQUISITION
- ☐ LETTER, DATED
- ☐ OTHER

% OF USAGE

CURRENT PUBLISHED SOURCE AND PRICE

REQUIRED BY SEC. 14?

☐ YES ☒ NO

COMPLETED?

☐ YES ☒ NO

PERSON CONTACTED

DATE

BY

PHONE ☐

LETTER ☐

PROCUREMENT PLAN COPY ☐

REASON IF NO OR LATE CONTACT

Insufficient dollars

BASIS FOR AWARD (REFER TO SECTIONS 3.2 AND 3.3 OF THE PURCHASING MANUAL)

☐ PRICE DECREASED (APPARENT SAVINGS DESCRIBED BELOW) %

☐ PRICE SAME AS LAST AGREEMENT

☐ PRICE INCREASED (EXPLAIN IN REMARKS) %

☐ EVALUATED LOW PRICE (SEE WORKSHEET)

☐ NEGOTIATED PURCHASE

☐ ENGINEERING OR USER PREFERENCE NOT EVALUATED LOW PRICE

☒ OTHER

SAVINGS SUMMARY (EXPLAIN IN REMARKS)

NOTE: Numbers Used Refer to Purchasing Savings Definitions SEE SECTION 8.3 OF THE PURCHASING MANUAL

- (1) NEW VENDOR \$
- (2) ALTERNATE MATERIAL
- (3) CHANGED QUANTITY
- (4) AVOIDANCE INDUSTRY-WIDE PRICE INCREASE
- (5) DIRECT PRICE REDUCTION
- (6) OPTION
- (7) SPARE PARTS
- (8) ESCALATION
- (9) FINANCIAL TERMS
- (10) INVENTORY REDUCTION
- (11) TRANSPORTATION
- (12) PACKAGING, MATERIALS HANDLING
- (13) OTHER
- TOTAL

REMARKS: (NOTE: REMARKS MUST BE COMPLETED IF OTHER THAN EVALUATED LOW PRICE IS CHECKED)

The core sampling is in conjunction with the Linde decontamination project. I.T. was the only contractor to bid on this project. Negotiations have begun to clarify the scope of work. By conducting a core sampling of several areas at the Linde site the scope of work will be clarified by I.T.

PURCHASING AGENT (SIGNATURE)

[Signature]

SUPPORTING DOCUMENTATION SHOULD BE ATTACHED



UNION CARBIDE CORPORATION
HEREINAFTER REFERRED TO AS "OWNER"

ADDRESS CORRESPONDENCE TO:

UCC - LINDE DIVISION
308 HARPER DRIVE
MOORESTOWN NJ 08057

ATTN: J.M.MERRIMAN (609) 778-6360

CONTRACTOR
INTERNATIONAL TECHNOLOGY CORP.
165 FIELDCREST AVENUE
EDISON NJ 08837

MAIL INVOICE IN DUPLICATE TO
UCC - LINDE DIVISION
SOUTH WOOD AVENUE
P.O. BOX 425
LINDEN NJ 07036

See Pkt

HEREINAFTER REFERRED TO AS "CONTRACTOR"

TERMS OF PAYMENT:

File
PAGE 1
TIME AND MATERIAL
CONSTRUCTION ORDER
MAINTENANCE
No. 905-302820

DATE: 06/11/87

ATTENTION: THE CONSTRUCTION
MAINTENANCE ORDER NUMBER ABOVE
MUST APPEAR ON ALL INVOICES AND
OTHER DOCUMENTS PERTAINING TO
THIS ORDER

UPON THE TERMS HEREIN CONTAINED, INCLUDING THE ADDITIONAL
TERMS ON THE REVERSE SIDE HEREOF, "OWNER" HEREBY ORDERS, AND
"CONTRACTOR" SHALL PERFORM, ALL THE WORK (HEREIN AFTER
CALLED THE "WORK") REQUIRED FOR THE EXECUTION AND COMPLETION
OF THE FOLLOWING, AT THE PRICES AND/OR RATES SHOWN BELOW,
AND UNLESS OTHERWISE SPECIFIED IN THIS "ORDER", "CONTRACTOR"
SHALL FURNISH AT ITS COST AND EXPENSE ALL LABOR, MATERIALS,
TOOLS, MACHINERY, EQUIPMENT, APPLIANCES, SHORING,
SCAFFOLDING, FALSE WORK, TRANSPORTATION AND ALL OTHER
NECESSARY FACILITIES FOR THE PERFORMANCE OF THE "WORK".
SCOPE OF WORK

CORE SAMPLING, TESTING AND REPORTING OF WALLS, FLOORS, PAD
AND ROOF.

THE "WORK" SHALL BE PERFORMED AT "OWNER'S" SOUTHWOOD AVENUE,
LINDEN, N. J. LOCATION (HEREINAFTER REFERRED TO AS THE
"SITE".)

WORK SCHEDULE

THE "WORK" SHALL BE COMPLETED ON OR BEFORE
JUNE 30, 1987.

RELEASING

THE "WORK" UNDER THIS "ORDER" SHALL BE REQUESTED BY "OWNER"
FROM TIME TO TIME BY MEANS OF WORK RELEASES (SAID WORK
RELEASES BEING HEREINAFTER IN THE SINGULAR CALLED
"WORK RELEASE" AND IN THE PLURAL "WORK RELEASES"). EACH
"WORK RELEASE" SUBMITTED BY "OWNER" TO "CONTRACTOR" UNDER
THIS "ORDER" SHALL BE IN WRITING, SHALL SPECIFY THAT PORTION
OF THE "WORK" WHICH IS TO BE PERFORMED AND THE LOCATION OF

UNION CARBIDE CORPORATION

CONTRACTOR

PLEASE SIGN AND RETURN ACKNOWLEDGMENT COPY

PURCHASING FILE

BY

PURCHASING AGENT



UNION CARBIDE CORPORATION
HEREINAFTER REFERRED TO AS "OWNER"

ADDRESS CORRESPONDENCE TO:

UCC - LINDE DIVISION
308 HARPER DRIVE
MOORESTOWN NJ 08057

PAGE 2

TIME AND MATERIAL
CONSTRUCTION ORDER
MAINTENANCE
No. 905-302820

ATTN: J.M.MERRIMAN (609) 778-6360

CONTRACTOR

INTERNATIONAL TECHNOLOGY CORP.
165 FIELDCREST AVENUE
EDISON NJ 08837

MAIL INVOICE IN DUPLICATE TO

UCC - LINDE DIVISION
SOUTH WOOD AVENUE
P.O. BOX 425
LINDEN NJ 07036

DATE: 06/11/87

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TERMS OF PAYMENT:

THE "SITE" TO WHICH SAID PORTION OF THE "WORK" RELATES AND
SHALL INCLUDE OR IDENTIFY ALL NECESSARY
"SPECIFICATIONS AND DRAWINGS" (HEREINAFTER CALLED,
RESPECTIVELY, "THE SPECIFICATIONS" AND "THE DRAWINGS").

ONLY THE FOLLOWING PERSONNEL OF "OWNER" ARE AUTHORIZED TO
ISSUE RELEASES AGAINST THIS "ORDER":

"NAME"

D. RENNER
J. CRANE
Y. BASHIR

UNLESS OTHERWISE AUTHORIZED BY THE "PURCHASING DEPARTMENT".

PAYMENT

OWNER SHALL PAY TO "CONTRACTOR" FOR THE PERFORMANCE OF THE
"WORK" AN AMOUNT DETERMINED IN ACCORDANCE WITH THE FOLLOWING
RATES:

BOTTLES.....	\$ 200.00
PRO CLOTHES.....	\$ 300.00
COMPOSITING.....	\$ 25.00
DETAILED REPORT.....	\$ 720.00
ROOF SAMPLES.....	\$ 75.00 EACH
QUAQC SAMPLES.....	\$ 75.00 EACH
SOIL SAMPLES FOR PCB'S.....	\$ 150.00 EACH
PAD AREA CHIP SAMPLES.....	\$ 150.00 EACH

OWNER SHALL PAY AN AMOUNT EQUAL TO THE SUM OF THE RESULTS OF
MULTIPLYING THE ACTUAL NUMBER OF HOURS WORKED IN THE
PERFORMANCE OF THE "WORK", INCLUDING OVERTIME WORK PERFORMED

UNION CARBIDE CORPORATION

CONTRACTOR

PLEASE SIGN AND RETURN ACKNOWLEDGMENT COPY

PURCHASING FILE

BY

STC-4010 9/86 REVISED

BY

PURCHASING AGENT



UNION CARBIDE CORPORATION
HEREINAFTER REFERRED TO AS "OWNER"

ADDRESS CORRESPONDENCE TO:

UCC - LINDE DIVISION
308 HARPER DRIVE
MOORESTOWN NJ 08057

ATTN: J.M.MERRIMAN (609) 778-6360

CONTRACTOR
INTERNATIONAL TECHNOLOGY CORP.
165 FIELDCREST AVENUE
EDISON NJ 08837

MAIL INVOICE IN DUPLICATE TO
UCC - LINDE DIVISION
SOUTH WOOD AVENUE
P.O. BOX 425
LINDEN NJ 07036

HEREINAFTER REFERRED TO AS "CONTRACTOR"

TERMS OF PAYMENT:

BY EACH EMPLOYEE WITHIN EACH CRAFT CATEGORY AS DESCRIBED
BELOW TIMES THE APPLICABLE STRAIGHT TIME LABOR RATES
SET FORTH BELOW WHICH CORRESPONDS TO THE CRAFT
CATEGORY OF SAID EMPLOYEE.

"CRAFT
CATEGORY"

"STRAIGHT TIME
LABOR RATE(1)"

FIELD SAMPLING COORDINATOR
TECHNICIANS
TRAVEL TIME

\$ 65.00/HOUR
\$ 35.00/HOUR
\$ 12.00/HOUR

(1) STRAIGHT TIME LABOR RATE IS DEFINED AS:
8 AM - 4:30 PM
MONDAY - FRIDAY

ANY PROPOSED CHANGES IN AMOUNTS PAYABLE HEREUNDER ARE
SUBJECT TO "OWNER'S" PRIOR WRITTEN APPROVAL AND SHOULD BE
ADDRESSED TO:

UNION CARBIDE CORPORATION
LINE DIVISION PURCHASING DEPARTMENT
308 HARPER DRIVE
MOORESTOWN, N. J. 08057

REPRESENTATIVES

CONTRACTOR SHALL CONTACT "OWNER'S" REPRESENTATIVE,
D. RENNER, TELEPHONE (609) 778-6365,
IN ADVANCE TO MAKE ARRANGEMENTS FOR STARTING THE "WORK".

PAGE 3

TIME AND MATERIAL
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UNION CARBIDE CORPORATION

CONTRACTOR

PLEASE SIGN AND RETURN ACKNOWLEDGMENT COPY

PURCHASING FILE

BY

STC-4010 9/86 REVISED

BY

PURCHASING AGENT



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PAGE 4

TIME AND MATERIAL
CONSTRUCTION ORDER
MAINTENANCE
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CONTRACTOR

INTERNATIONAL TECHNOLOGY CORP.
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MAIL INVOICE IN DUPLICATE TO

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HEREINAFTER REFERRED TO AS "CONTRACTOR"

TERMS OF PAYMENT:

GENERAL PROVISIONS

"CONTRACTOR HEREBY CERTIFIES THAT IT IS COMPLIANCE WITH THE IMMIGRATION REFORM AND CONTRAL ACT OF 1986 (THE "ACT"); THAT IT DOES NOT HAVE IN ITS EMPLOY ANY ALIEN WHO IS NOT AUTHORIZED TO WORK IN THE UNITED STATES AND SHALL INDEMNIFY AND HOLD HARMLESS UNION CARBIDE CORPORATION FROM AND AGAINST ANY AND ALL CLAIMS, CHARGES, LIABILITIES, PENALTIES (CRIMINAL OR CIVIL) WHICH MAY BE IMPOSED UPON UNION CARBIDE CORPORATION AS A RESULT OF CONTRACTOR'S VIOLATION OF SUCH ACT."

CONTRACTOR SHALL BE RESPONSIBLE FOR RECEIVING, UNLOADING, TRANSPORTING, AND OTHERWISE HANDLING ITS MATERIALS, TOOLS, AND EQUIPMENT, AND OTHER ITEMS REQUIRED FOR THE SATISFACTORY COMPLETION OF THE "WORK".

WITHOUT LIMITING THE GENERALITY OF THE PROVISIONS OF SECTION 12 OF THE "ADDITIONAL TERMS" ON THE REVERSE SIDE OF THE FIRST PAGE OF THIS "ORDER", "CONTRACTOR" SHALL FURNISH AND ITS EMPLOYEES SHALL WEAR SAFETY GOGGLES AND SAFETY HARD HATS OR CAPS AT ALL TIMES WHILE IN, ON, OR ABOUT "OWNER'S" PREMISES DURING THE PERFORMANCE OF THE "WORK".

IN FURTHERANCE OF PARAGRAPH 12 - "SAFETY" - OF THE "ADDITIONAL TERMS": ON THE REVERSE SIDE OF PAGE 1 OF THIS "ORDER", ATTACHED HERETO IS THE DOCUMENT ENTITLED "UNION CARBIDE CORPORATION, LINDE DIVISION, SAFETY RULES FOR CONTRACTOR," DATED OCTOBER 1985, WHICH IS APPLICABLE TO THIS ORDER.

REMOVE IN THEIR ENTIRETY PARAGRAPHS 12, SAFETY AND 20, LABOR RESPECTIVELY FROM THE "ADDITIONAL TERMS" CONTAINED ON THE REVERSE SIDE HEREOF AND REPLACE WITH THE FOLLOWING:
12. SAFETY -- CONTRACTOR SHALL COMPLY WITH, AND SHALL

UNION CARBIDE CORPORATION

CONTRACTOR

PLEASE SIGN AND RETURN ACKNOWLEDGMENT COPY

PURCHASING FILE

BY

PURCHASING AGENT

BY

STC-4010 9/86 REVISED



UNION CARBIDE CORPORATION
HEREINAFTER REFERRED TO AS "OWNER"

ADDRESS CORRESPONDENCE TO:

UCC - LINDE DIVISION
308 HARPER DRIVE
MOORESTOWN NJ 08057

ATTN: J.M.MERRIMAN (609) 778-6360

CONTRACTOR
INTERNATIONAL TECHNOLOGY CORP.
165 FIELDCREST AVENUE
EDISON NJ 08837

MAIL INVOICE IN DUPLICATE TO
UCC - LINDE DIVISION
SOUTH WOOD AVENUE
P.O. BOX 425
LINDEN NJ 07036

HEREINAFTER REFERRED TO AS "CONTRACTOR"

TERMS OF PAYMENT:

CAUSE ITS EMPLOYEES AND ALL SUBCONTRACTORS TO ABIDE BY ALL ENVIRONMENTAL, HEALTH, SAFETY AND SECURITY RULES AND REGULATIONS IN FORCE AT THE SITE OF THE WORK.

20. LABOR -- CONTRACTOR SHALL EMPLOY, OR CAUSE TO BE EMPLOYED, ON OR IN CONNECTION WITH THE PERFORMANCE OF THE WORK, ONLY PERSONS WHO ARE FIT AND SKILLED IN THE WORK ASSIGNED. SHOULD ANY DISORDERLY, INCOMPETENT, OR OBJECTIONABLE PERSON BE EMPLOYED ON THE WORK BY CONTRACTOR OR BY ANY OF ITS SUBCONTRACTORS, CONTRACTOR SHALL, UPON REQUEST OF OWNER, CAUSE SUCH PERSON TO BE REMOVED FROM THE WORK. EACH INVOICE SUBMITTED BY CONTRACTOR SHALL CONTAIN THE FOLLOWING CERTIFICATION BY CONTRACTOR: "WE HEREBY CERTIFY THAT THE WORK COVERED BY THIS INVOICE WAS PERFORMED IN COMPLIANCE WITH ALL REQUIREMENTS OF THE FAIR LABOR STANDARDS ACT OF 1938, AS AMENDED. CONTRACTOR IS AND SHALL PERFORM THE "WORK" HEREUNDER AS AN INDEPENDENT CONTRACTOR AND ALL OF "CONTRACTOR'S" EMPLOYEES ENGAGED IN THE PERFORMANCE OF THE "WORK" HEREUNDER SHALL BE EMPLOYED, DISCHARGED, AND EXCLUSIVELY SUPERVISED AND CONTROLLED BY "CONTRACTOR" AND SHALL BE EMPLOYEES OF "CONTRACTOR" AND NOT OF "OWNER".

TAX STATUS

THE "WORK" REQUIRED BY THIS "ORDER" IS A "CAPITAL IMPROVEMENT" AND LABOR CHARGES ARE EXEMPT FROM STATE AND LOCAL TAXES. CONTRACTOR IS RESPONSIBLE FOR ALL APPLICABLE TAXES ON MATERIALS USED.

INVOICING INSTRUCTIONS/AUDIT REQUIREMENTS

CONTRACTOR SHALL SUBMIT TO "OWNER" AN INVOICE IN A MANNER

PAGE 5
TIME AND MATERIAL
CONSTRUCTION ORDER
MAINTENANCE
No. 905-302820

DATE: 06/11/87

ATTENTION: THE CONSTRUCTION
MAINTENANCE ORDER NUMBER ABOVE
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UNION CARBIDE CORPORATION

CONTRACTOR

PLEASE SIGN AND RETURN ACKNOWLEDGMENT COPY

PURCHASING FILE



UNION CARBIDE CORPORATION
HEREINAFTER REFERRED TO AS "OWNER"

ADDRESS CORRESPONDENCE TO:

UCC - LINDE DIVISION
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MOORESTOWN NJ 08057

PAGE 6

TIME AND MATERIAL
CONSTRUCTION ORDER
MAINTENANCE
No. 905-302820

ATTN: J.M.MERRIMAN (609) 778-6360

CONTRACTOR

INTERNATIONAL TECHNOLOGY CORP.
165 FIELDCREST AVENUE
EDISON NJ 08837

MAIL INVOICE IN DUPLICATE TO

UCC - LINDE DIVISION
SOUTH WOOD AVENUE
P.O. BOX 425
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DATE: 06/11/87

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TERMS OF PAYMENT:

ACCEPTABLE TO OWNER REFERENCING "OWNER'S" ORDER NUMBER
AND/OR RELEASE NUMBER. EACH INVOICE SHALL BE SUPPORTED BY
SUCH EVIDENCE AS TO ITS CORRECTNESS AS "OWNER" SHALL
REASONABLY REQUEST, AND SHALL CONTAIN THE FOLLOWING
CERTIFICATION: "WE HEREBY CERTIFY THAT THE WORK COVERED BY
THIS INVOICE WAS PERFORMED IN COMPLIANCE WITH THE FAIR
LABOR STANDARDS ACT OF 1938 AS AMENDED," AND SHOULD BE
ADDRESSED TO:

UNION CARBIDE CORPORATION
LINDE DIVISION
SOUTHWOOD AVENUE
LINDEN, N. J.

INVOICES REFLECTING HOURLY RATES MUST BE SUPPORTED BY TIME
SHEETS, SIGNED BY "OWNER'S" REPRESENTATIVE, SHOWING NAMES,
CRAFT CATEGORIES, DATES AND HOURS WORKED, PREMIUM HOURS
WORKED, RENTAL EQUIPMENT AND MATERIALS SUPPLIED, AND MILEAGE
CHARGES. INVOICES CONTAINING MATERIAL COSTS OVER \$100.00
PRIOR TO MARK-UP MUST BE SUPPORTED BY SUPPLIER INVOICES.

NOTE: IN THE EVENT "CONTRACTOR" DOES NOT HAVE A TIME SHEET
FORMAT AND CANNOT PROVIDE AN ACCEPTABLE TIME SHEET FORM,
"OWNER'S" REPRESENTATIVE WILL PROVIDE SUCH A FORM FOR PROPER
DOCUMENTATION AND CONTROL.

INVOICES FOR ANY PORTION OF THE "WORK" PERFORMED IN
"CONTRACTOR'S" FACILITIES WHICH REFLECT HOURLY RATES MUST
SHOW NAMES, CRAFT CATEGORIES, DATES AND HOURS WORKED, AND
PREMIUM HOURS WORKED. INVOICES CONTAINING MATERIAL COSTS
OVER \$100.00 PRIOR TO MARK-UP MUST BE SUPPORTED BY SUPPLIER
INVOICES.

TERMS OF PAYMENTS

UNION CARBIDE CORPORATION

CONTRACTOR

PLEASE SIGN AND RETURN ACKNOWLEDGMENT COPY

PURCHASING FILE

BY

PURCHASING AGENT



UNION CARBIDE CORPORATION
HEREINAFTER REFERRED TO AS "OWNER"

ADDRESS CORRESPONDENCE TO:

UCC - LINDE DIVISION
308 HARPER DRIVE
MOORESTOWN NJ 08057

PAGE 7

TIME AND MATERIAL
CONSTRUCTION ORDER
MAINTENANCE
No. 905-302820

ATTN: J.M. HERRIMAN (609) 778-6360

CONTRACTOR
INTERNATIONAL TECHNOLOGY CORP.
165 FIELDCREST AVENUE
EDISON NJ 08837

MAIL INVOICE IN DUPLICATE TO
UCC - LINDE DIVISION
SOUTH WOOD AVENUE
P.O. BOX 425
LINDEN NJ 07036

DATE: 06/11/87

ATTENTION: THE CONSTRUCTION
MAINTENANCE ORDER NUMBER ABOVE
MUST APPEAR ON ALL INVOICES AND
OTHER DOCUMENTS PERTAINING TO
THIS ORDER

HEREINAFTER REFERRED TO AS "CONTRACTOR"

TERMS OF PAYMENT:

NET THIRTY (30) DAYS AFTER SATISFACTORY COMPLETION OF THE
"WORK" AND "OWNER'S" RECEIPT OF PROPER INVOICE FROM
"CONTRACTOR" AND, IF REQUESTED BY "OWNER", SATISFACTORY
EVIDENCE THAT THE "WORK" AND THE SITE OF THE "WORK" ARE FREE
AND CLEAR OF ALL MECHANICS' AND OTHER LIENS AND THE
POSSIBILITY THEREOF.

INSURANCE/ACKNOWLEDGEMENT REQUIREMENTS

"CONTRACTOR" SHALL SUPPLY "OWNER" WITH PROOF OF "WORKMEN'S
COMPENSATION" AND "INJURY LIABILITY INSURANCE" AND A SIGNED
ACKNOWLEDGEMENT COPY OF THE "ORDER" PRIOR TO PERFORMING ANY
"WORK" UNDER SAID "ORDER". DOCUMENTS SHOULD BE
ADDRESSED TO:

UNION CARBIDE CORPORATION
LINDE DIVISION PURCHASING DEPARTMENT
308 HARPER DRIVE
MOORESTOWN, N. J. 08057

ENTIRE AGREEMENT

THIS "ORDER" SETS FORTH THE ENTIRE AGREEMENT BETWEEN "OWNER"
AND "CONTRACTOR" WITH RESPECT TO THE SUBJECT MATTER HEREOF
AND ALL PRIOR NEGOTIATIONS AND DEALINGS PERTAINING TO THE
SUBJECT MATTER HEREOF SHALL BE DEEMED TO BE MERGED HEREIN.
ACCEPTANCE OF THIS "ORDER" MUST BE ONLY UPON THE TERMS AND
CONDITIONS HEREIN CONTAINED.

COMMODITY CODE 3510 RV

Total value of this "order" is \$5,000.00.

UNION CARBIDE CORPORATION

CONTRACTOR

PLEASE SIGN AND RETURN ACKNOWLEDGMENT COPY

PURCHASING FILE

BY

J.M. Merriman
PURCHASING AGENT

BY

STC-4010 9/86 REVISED



INTERNAL
CORRESPONDENCE

Q97 E

308 Harper Drive, Caller Service 13, Moorestown, New Jersey 08057

To

N. A. DiFranco

Date

October 19, 1987

Originating Dept.

Packaged Industrial Gases

Copy to

Subject

L. E. Barron
J. R. Crane
T. E. DeBraie
G. J. Hoeing
A. K. Jones
C. R. Koch
A. C. Salas
V. A. Smith
R. G. Tisch

Linden Hydrogen Plant
Hydrocarbon Spill Report

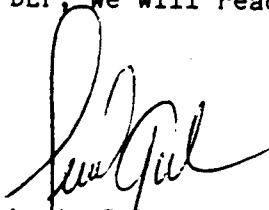
Code: GOF 5.9.2

On October 14, 1987 at approximately 1635 hrs. the writer, as instructed, placed the call with the New Jersey DEP to report a spill incident at our Linden, New Jersey hydrogen plant. Information from the resulting call as follows:

1. Where called: Operator Help
(609) 292-7172
2. Time: 1635 Hrs.
3. Who took call: Code: Mcasee
4. Information requested:
 - o Name - Fred Galvan
 - o Address - 308 Harper Dr.
 - o City - Moorestown, NJ 08057
 - o Phone - (609) 778-6277
 - o Position - Region Operations Manager
 - o Company Name - Union Carbide
 - o Address - Linden Plant
South Wood Ave.
 - o City - Linden, NJ 07036
 - o Phone - (201) 862-2422
5. What are we reporting:
 - At a specific area of our plant we know of some hydrocarbon contaminated soil which we want to clean up. We are in the process of calling a contractor to have it taken care of and thought we should first call the DEP. Asked when did it happen -- probably in past history as we collected oil from a compressor discharge and may at times overfill some containers. In sampling the soil for hydrocarbon confirmation we found that the soil also had 16 PPM of mercury.
6. Instructions given
 - Someone would be calling back or going by the plant.

As of this date, no one has called me or the Linden Plant Manager.

Should you have any questions on the matter, please contact me as soon as possible. In the meantime, should we get a letter, call or visit by the DEP, we will reach for you.

A handwritten signature in cursive script, appearing to read "A. A. Galvan".

A. A. Galvan
/8



Union Carbide Corporation
Linde Division
308 Harper Drive, Caller Service 13
Moorestown, New Jersey 08057
Telephone (609) 778-6200

RECEIVED

AUG 12 1988

August 11, 1988

UNION CARBIDE CORP.
SOMERSET REGION OFFICE
SOMERSET, N.J.

Ms. Leah J. Webb
International Technology, Corporation
165 Fieldcrest Avenue
Edison, NJ 08818

Re: **HAZARDOUS WASTE MANIFEST**
LINDEN PLANT MERCURY CLEAN-UP

Dear Ms. Webb:

I wanted to summarize our telephone conversation(s) of 8/1/88 in an attempt to bring resolution to what I consider to be substantive "paperwork" issues relative to the above referenced subject. My concerns revolve around the proper preparation of the Hazardous Waste manifests and properly disseminating the paperwork to the required state agencies.

On at least two occasions the transporter selected to haul the hazardous waste from our facility (Freehold Cartage, Inc.) has returned the wrong copies of the hazardous waste manifest to us. This occurred with shipments on 7/26/88 and 7/28/88. I am enclosing copies of manifest(s) numbered NYA 7559073 and NYA 7559064. In both cases, the TSD facility copy and the transporter copy of the manifest were returned to me as evidence of shipment. I am unable to determine where the "Disposer State" "Generator State" and Generator copies are.

On at least four occasions, (7/22/88, 6/28/88; NYA 7559019, NYA 7559676, NYA 7559685, NYA 7559028) "Disposer State" copies were returned to me with no "Generator" copies attached. (copies enclosed).

As a third matter, my analysis of the manifests prepared on 7/22/88, 7/26/88, and 7/28/88 revealed an improper entry of the Generator's US EPA No. (block 1) the number which appears on the manifest is NJD011892735. The correct Generator's US EPA No. is NJD011392735. (Manifest numbered NYA 7559019, NYA 7559064 and NYA 7559073).

Three (3) shipments of hazardous waste may have been delivered to the SCA Chemical Services, Inc. site in Model City, NY without the requisite land burial ban waste certification form being left with the shipment. The shipments at issue in this regard were shipped on 7/11/88 and 6/20/88 on hazardous waste manifest(s) numbered NYA 7558821, NYA 7558794 and NYA 7558785. The copy of the waste characterization form which was attached to the TSD facility copy of the manifest was returned to me with the generator copy of the manifest(s). I have enclosed those copies to you

so they may be properly transmitted to the TSD facility. In all three cases the transporter was American Industrial Marine.

As a final matter, on 7/21/88 on New York State manifest numbered NYA 7558866, a shipment containing seven (7) cylinders of mercury was shipped from our Linden, NJ facility to a recycler in Hellertown, PA (Bethlehem Apparatus Company, Inc.). I am not clear why the shipment was undertaken on a New York State manifest. Would you recommend I go ahead and forward the Disposer State and Generator State copies of the manifest even though they are copies from the New York State manifest. If not, what is your recommendation on rectifying this situation? As a tangential matter The entry in block K of the manifest (Handling Codes for Waste listed above) is an error. My best judgement is the appropriate entry for this item is R (R=Material Recovery of More than 75 percent of total material). Since the material contained in the seven cylinders shipped to Bethlehem apparatus is mercury and is, in fact recoverable, my feeling is the entry appearing on the manifest is incorrect.

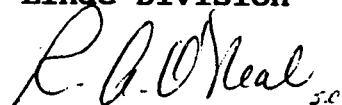
The situations outlined above force me to conclude a more diligent monitoring of the preparation of the paperwork which must accompany these shipments is required. Union Carbide's responsibility is to see to it that disposal of hazardous waste is properly handled. Proper preparation and execution of the paperwork is an integral part of that process.

To summarize, I have forwarded the Landburial Ban Waste certification forms for distribution to the appropriate disposal facility. Secondly, it is my understanding you are following-up with the PA and NJ environmental authorities regarding the improper use of the NY Hazardous Waste Manifest when the NJ manifest was actually called for. Thirdly, you will handle the forwarding of the copies of the manifest(s) to the TSD facilities as required. You will also attempt to obtain the generator copies of the specified manifest(s) so our files will be complete. You will contact the appropriate environmental agencies in order to correct those manifest documents submitted with improper entries of the generator's US EPA number.

Please review these matters and contact me with any alternative suggestions you may have. In any event, I trust we both recognize the advantage of resolving these matters on the most expeditious timetable possible.

Very truly yours,

UNION CARBIDE CORPORATION
Linde Division

A handwritten signature in dark ink, appearing to read "R. A. O'Neal". The signature is fluid and cursive, with a small "s.c." written at the end.

R. A. O'Neal
Region Technical Supervisor
Packaged Gases & Distributors

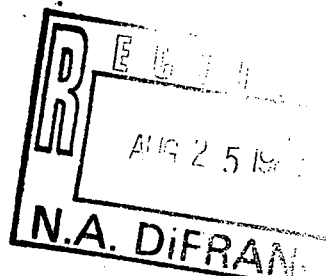
RAO:sc
RAO10.DEL

cc: N. A. DiFranco
A. A. Galvan

Enclosures



Union Carbide Corporation
Linde Division
308 Harper Drive, Caller Service 13
Moorestown, New Jersey 08057
Telephone (609) 778-6200



RECEIVED

AUG 25 1988

UNION CARBIDE CORP.
SOMERSET REGION OFFICE
SOMERSET, N.J.

August 23, 1988

Leah J. Webb, Project Manager
Remediation Project Management
IT Corporation
165 Fieldcrest Avenue
P. O. Box 7809
Edison, NJ 08818-7809

Dear Ms. Webb:

Enclosed are executed originals of the Generator's Waste Material Profile Sheets numbered H34037, H34040, H34039, J10412 and J10411. These profile correspond to the following waste materials: used carbon, water cooler sludge, waste oil, caustic waste (liquid) and caustic waste (solid), respectively. These documents are to be filed in connection with the mercury clean-up at the Linden plant #905. I have retained the analysis reports as we agreed. The original profile sheets are forwarded to you for distribution. If I can be of further assistance, please call me at (609) 778-6338.

Very truly yours,

UNION CARBIDE CORPORATION
Linde Division

R. A. O'Neal
Region Technical Supervisor
Packaged Gases & Distributors

RAO:sc
RA014.DEL

cc: N. A. DiFranco
A. A. Galvan

Enclosures



Union Carbide Corporation
Linde Division
308 Harper Drive, Caller Service 13
Moorestown, New Jersey 08057
Telephone (609) 778-6200

RECEIVED

SEP -2 1988

UNION CARBIDE CORP. SEP 2 1988
SOMERSET REGIONAL OFFICE
SOMERSET, NJ
N.A. DiFRANCO

August 31, 1988

NYS DEC-Division of Hazardous Substances Regulations
Manifest Section
Post Office Box 12820
Albany, NY 12212
Attn: Lawrence J. Nadler, P.E.

Dear Mr. Nadler:

Enclosed are the "Disposer State" copies of Hazardous Waste Manifest(s) numbered NY A 747044 1 and NY A 755903 7, which correspond to waste shipments to SCA Chemical Services, Inc. at 1550 Balmer Road, Model City,, NY 14107, on August 18, 1988. Should you require additional information, please contact me at (609) 778-6338.

Very truly yours,

UNION CARBIDE CORPORATION
Linde Division

R. A. O'Neal

R. A. O'Neal
Region Technical Supervisor
Packaged Gases & Distributors

RAO:sc
RAO21.DEL

cc: N. A. DiFranco
A. A. Galvan

Enclosures



Union Carbide Corporation
Linde Division
308 Harper Drive, Caller Service13
Moorestown, New Jersey 08057
Telephone (609) 778-6200

RECEIVED

SEP -2 1988

UNION CARBIDE CORP.
SOMERSET REGIONAL OFFICE
SOMERSET, NJ

August 31, 1988

State of New Jersey
Department of Environmental Protection
Division of Hazardous Waste Management
Manifest Section
CN 028
Trenton, NJ 08625

Dear Sirs:

Enclosed are the "Generator State" copies of Hazardous Waste Manifest(s) numbered NY A 747044 1 and NY A 755903 7, which correspond to waste shipments to SCA Chemical Services, Inc. at 1550 Balmer Road, Model City,, NY 14107, on August 18, 1988. Should you require additional information, please contact me at (609) 778-6338.

SEP 2 1988

Very truly yours,

UNION CARBIDE CORPORATION
Linde Division

R. A. O'Neal s.c.

R. A. O'Neal
Region Technical Supervisor
Packaged Gases & Distributors

RAO:sc
RAO21.DEL

cc: N. A. DiFranco
A. A. Galvan

Enclosures

Date:

RECEIVED

SEP - 1 1993

UNION CARBIDE CORP.
SOMERSET REGION OFFICE
SOMERSET, N.J.

\$1,926.80

Clear Credit to:

Loc. No.

Sales Tax: 880000-80-00004836

Tax Area Code: 37006

Bus. Code: 101

Code: 101
SALES TYPE "A"

Copy: Cashier (3)

M.A. Bennett - IRD ACCOUNTING
Y. BASHIR - Birde, Birde, N.Y.
Nick Di Franco - Somerset, NJ
Henry Kase - Wilmington, CA
Dorothy Winstead - Houston, TX

For IRD information only:

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1	1
2	2
3	3
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Book Value:

Code:

Posted to business report:

PAID

AUG 29 1988 # 10465
1926-86

Union Carbide
Chemical Co.
So. Charleston W. Va.

PREPARED BY: Charlotte Cogar - Investment Recovery Department - Bldg. 3005-3 -
South Charleston, WV (511)
8-721-3284 or (304) 747-3284

0.00 *

521.16 x

3.60 =

1876.18 1/4 T

MERCURY INCOMING SHEET

Received at



BETHLEHEM APPARATUS CO., Inc.

HELLERTOWN, PENNA. 18055

201-11

No 5250

Date 7/21/88

From: UNION CARBIDE
LINDE DIV.
SOUTH WOOD AVE
LINDEN NJ 07036

Via _____

Pro # _____

Type containers: 8 Flasks _____ Poly Bottles _____ Glass _____ Other _____

Gross wt. 596.10

Wt. of containers 67.00

Hg. wt. 529.10

Shrinkage 7.94

Net wt. 521.16

Date processed 7/25/88

Received by TRD

Customer _____

REMARKS:



Bethlehem Apparatus Company, Inc.

890 Front St., P.O. Box Y, Hellertown, PA 18055 • 215-838-7034 • FAX 215 838-6333 • TELEX 494-9195

July 28, 1988

Union Carbide Corporation
Investment Recovery Department
P.O. Box 8361 - Bldg. 3005/3
South Charleston, WV 25303

SUBJECT: METALLIC MERCURY RECYCLE AGREEMENT

Agreement No.: 201

This will certify that materials covered by the subject agreement and described below for recycling at our facilities located at 890 Front Street, Hellertown, Pennsylvania, have been recycled and resulted in the following recovery yields.

SURPLUS AND SPENT METALLIC MERCURY

<u>MANIFEST OR BILL OF LADING NO.</u>	<u>RELEASE NO.</u>	<u>DATE REC'D</u>	<u>QUANTITY RECEIVED NET LBS.</u>	<u>MERCURY RECOVERED NET LBS.</u>	<u>YIELD %</u>
IRD 0006968	201-18	07/12/88	2.66	2.66	95.0%
IRD 0006557	201-17	07/20/88	11.40	11.40	95.0%
IRD 006654	201-11	07/21/88	521.16	521.16	98.5%

Linden, NJ

DeFranco

BETHLEHEM APPARATUS COMPANY, INC.

BY

Bruce J. Lawrence
Bruce J. Lawrence, President



Union Carbide Corporation
Linde Division
308 Harper Drive, Caller Service 13
Moorestown, New Jersey 08057
Telephone (609) 778-6200

RECEIVED

OCT 14 1988

UNION CARBIDE CORPORATION
SOMERSET REGION OFFICE
SOMERSET, N.J.
October 11, 1988

State of New Jersey
Department of Environmental Protection
Division of Hazardous Waste Management
Manifest Section
CN 028
Trenton, NJ 03625

Dear Sirs:

Enclosed is the "Generator State" copy of Hazardous Waste Manifest numbered NYA 755904 6 which corresponds to a waste shipment to SCA Chemical Services, Inc. at 1550 Balmer Road, Model City, New York 14107, on August 8, 1988.

Should you require additional information, please contact me at (609) 778-6338.

Very truly yours,

UNION CARBIDE CORPORATION
Linde Division

R. A. O'Neal
Region Technical Supervisor
Packaged Gases & Distributors

RAO:mr
RAO2

Enclosures

cc: N. A. DiFranco
A. A. Galvan
Y. Bashir

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SOLID AND HAZARDOUS WASTE

HAZARDOUS WASTE MANIFEST

P.O. Box 12820, Albany, New York 12212

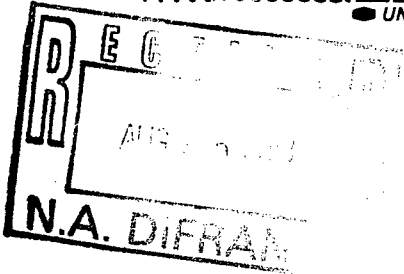
Form Approved. OMB No. 2050-0039. Expires 9-30-88

Please print or type.

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA No. N J D 0 1 1 2 9 2 7 3 5		Manifest Document No.		2. Page 1 of 1		Information in the shaded areas is not required by Federal Law.	
3. Generator's Name and Mailing Address Union Carbide Corp. Linde Division Foot of South Wood Avenue Linden, NJ 07036				A. State Manifest Document No. NY A 755904 6					
4. Generator's Phone (201) 862-2422				B. Generator's ID SAFE					
5. Transporter 1 (Company Name) Freehold Cartage, Inc.				6. US EPA ID Number N J D 0 5 4 1 2 6 1 6 4		C. State Transporter's ID 222-166			
7. Transporter 2 (Company Name)				8. US EPA ID Number		D. Transporter's Phone (201) 462-1001			
9. Designated Facility Name and Site Address SCA Chemical Services, Inc. 1550 Balmer Road Model City, NY 14107				10. US EPA ID Number N Y D 0 4 9 8 3 6 6 7 9		E. State Transporter's ID			
						F. Transporter's Phone ()			
						G. State Facility's ID			
						H. Facility's Phone (716) 754-8231			
11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)				12. Containers		13. Total Quantity		14. Unit	
				No. Type		Quantity		Wt/Vol	
a. RQ Hazardous Waste Solid, H.O.S. (D009), ORM-E, NA 9189				0 0 1 C N		30		Y	
b.									
c.									
d.									
J. Additional Descriptions for Materials listed Above				K. Handling Codes for Wastes Listed Above					
a. Mercury contaminated debris				c		a <input checked="" type="checkbox"/>		c <input type="checkbox"/>	
b				d		b <input type="checkbox"/>		d <input type="checkbox"/>	
15. Special Handling Instructions and Additional Information									
a. MDC profile no. V 76453, Work Order No. 133289									
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and state laws and regulations. If I am a large quantity generator, I certify that I have program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR if I am a small generator, I have made a good faith effort to minimize my waste and select the best waste management method that is available to me and that I can afford.									
Printed/Typed Name RA O NEAL				Signature <i>RA O NEAL</i>				Mo. Day Year 08/08/88	
17. Transporter 1 (Acknowledgement of Receipt of Materials)									
Printed/Typed Name JAY KETCHAM				Signature <i>Jay Ketcham</i>				Mo. Day Year 08/08/88	
18. Transporter 2 (Acknowledgement of Receipt of Materials)									
Printed/Typed Name				Signature				Mo. Day Year	
19. Discrepancy Indication Space									
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.									
Printed/Typed Name				Signature				Mo. Day Year	



Union Carbide Corporation
Linde Division
308 Harper Drive, Caller Service 13
Moorestown, New Jersey 08057
Telephone (609) 778-6200



RECEIVED

AUG 25 1988

UNION CARBIDE CORP. August 23, 1988
SOMERSET REGION OFFICE
SOMERSET, N.J.

NYS DEC-Division of Hazardous Substances Regulations
Manifest Section
Post Office Box 12820
Albany, NY 12212
Attn: Lawrence J. Nadler, P.E.

Dear Mr. Nadler:

Enclosed is the "Disposer State" copy of Waste Manifest NY A 755905 5 which corresponds to a waste shipment to SCA Chemical Services, Inc., at 1550 Balmer Road, Model City, NY 14107 on August 2, 1988. Should you require additional information, please contact me (609) 778-6338.

Very truly yours,

UNION CARBIDE CORPORATION
Linde Division

R. A. O'Neal
Region Technical Supervisor
Packaged Gases & Distributors

RAO:sc
RA015.DEL

cc: Y. Bashir
N. A. DiFranco
A. A. Galvan

Enclosure



Union Carbide Corporation
Linde Division
308 Harper Drive, Caller Service 13
Moorestown, New Jersey 08057
Telephone (609) 778-6200

August 23, 1988

State of New Jersey
Department of Environmental Protection
Division of Hazardous Waste Management
Manifest Section
CN 028
Trenton, NJ 08625

Dear Sirs:

Enclosed is the "Generator State" copy of Hazardous Waste Manifest NY A 755905 5 which corresponds to a waste shipment to SCA Chemical Services, Inc. at 1550 Balmer Road, Model City, NY 14107, on August 2, 1988. Should you require additional information, please contact me at (609) 778-6338.

Very truly yours,

UNION CARBIDE CORPORATION
Linde Division

R. A. O'Neal
Region Technical Supervisor
Packaged Gases & Distributors

RAO:sc
RA016.DEL

cc: Y. Bashir
N. A. DiFranco
A. A. Galvan

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SOLID AND HAZARDOUS WASTE

HAZARDOUS WASTE MANIFEST

P.O. Box 12820, Albany, New York 12212

Form Approved. OMB No. 2050-0039. Expires 9-30-88

Please print or type.

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA No. N J D 0 1 1 3 9 2 7 3 5		Manifest Document No.		2. Page 1 of 1		Information in the shaded areas is not required by Federal Law.	
3. Generator's Name and Mailing Address Union Carbide Corp Linde Division Foot of South Wood Avenue Linden, -NJ 07036		4. Generator's Phone (201) 862-2422		6. US EPA ID Number N J D 0 5 4 1 2 6 1 6 4		A. State Manifest Document No. NY A755905 5		B. Generator's ID SAME	
5. Transporter 1 (Company Name) Freehold Cartage, Inc.		7. Transporter 2 (Company Name)		8. US EPA ID Number		C. State Transporter's ID		D. Transporter's Phone (201) 462-1001	
9. Designated Facility Name and Site Address SCA Chemical Services, Inc. 1550 Balmer Road Model City, NY 14107		10. US EPA ID Number N Y D 0 4 9 8 3 6 6 7 9		E. State Transporter's ID		F. Transporter's Phone ()		G. State Facility's ID	
11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)		12. Containers		13. Total Quantity		14. Unit		15. Waste No.	
a. RQ Hazardous Waste Solid, Mm N.O.S. (D009), ORM-E, NA 9189		No. 0 0 1 Type C M		17		Y		D009	
b.									
c.									
d.									
J. Additional Descriptions for Materials listed Above		K. Handling Codes for Wastes Listed Above							
a. Mercury contaminated debris		c.		a. <input checked="" type="checkbox"/>		c. <input type="checkbox"/>			
b.		d.		b. <input type="checkbox"/>		d. <input type="checkbox"/>			
15. Special Handling Instructions and Additional Information									
a. HDC profile no. V 76453, Work Order No. 133111									
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and state laws and regulations. If I am a large quantity generator, I certify that I have program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR if I am a small generator, I have made a good faith effort to minimize my waste and select the best waste management method that is available to me and that I can afford.									
Printed/Typed Name		Signature		Mo.		Day		Year	
17. Transporter 1 (Acknowledgement of Receipt of Materials)									
Printed/Typed Name		Signature		Mo.		Day		Year	
18. Transporter 2 (Acknowledgement or Receipt of Materials)									
Printed/Typed Name		Signature		Mo.		Day		Year	
19. Discrepancy Indication Space									
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.									
Printed/Typed Name		Signature		Mo.		Day		Year	

NY A 755905 5



INTERNATIONAL
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SEP -9 1988

September 2, 1988

Mr. Lawrence J. Nadler, P.E.
State of New York
Department of Environmental Conservation (DEC)
Supervisor, Manifest Section
Bureau of Hazardous Waste Operations
Division of Hazardous Substances Regulation
P. O. Box 12820
Albany, New York 12212

Dear Mr. Nadler:

Enclosed are New York DEC's copies of manifests NYA755906 4 and NYA755907 3, as well as a xerox copy of manifest NYA755901 9. Please change the Generator's US EPA No. (Item 1) NJD011892735 to NJD011392735. The fourth digit should be a three (3), not an eight (8).

Because the transporter automatically removed the last three pages of the manifests for the Generator, the Generator does not have the appropriate manifest pages. The New York DEC indicated that any legible copies of the manifests would be acceptable, so we are sending Copy 6 to you for your records.

Please keep these copies along with this letter. I apologize for these errors and have taken steps to avoid their recurrence. Please call me if you have any questions or concerns regarding this matter. Thank you.

Very truly yours,

IT CORPORATION

Leah J. Webb
Project Manager
Remediation Project Management

enc/

Regional Office

165 Fieldcrest Avenue • P.O. Box 7809 • Edison, New Jersey 08818-7809 • 201-225-2000



STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SOLID AND HAZARDOUS WASTE

HAZARDOUS WASTE MANIFEST

P.O. Box 12820, Albany, New York 12212

Form Approved. OMB No. 2050-0039. Expires 9-30-92

Please print or type.

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA No. NY D 011892735		Manifest Document No.		2. Page 1 of 1		Information in the shaded areas is not required by Federal Law.	
3. Generator's Name and Mailing Address Union Carbide Corp Linde Division Foot of South Wood Avenue Linden, NJ 07036		A. State Manifest Document No. NY A 755906 4		B. Generator's ID 1000		C. State Transporter's ID 350-1507		D. Transporter's Phone (201) 462-1001	
4. Generator's Phone (201) 862-2422		6. US EPA ID Number NY D 054126164		8. US EPA ID Number		E. State Transporter's ID		F. Transporter's Phone	
5. Transporter 1 (Company Name) Freshold Cartage, Inc.		7. Transporter 2 (Company Name)		9. Designated Facility Name and Site Address SCA Chemical Services, Inc. 1550 Balmer Road Rosal City, NY 14107		10. US EPA ID Number NY D 049836679		G. State Facility's ID 716 754-0231	
11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)		12. Containers		13. Total Quantity		14. Unit		15. Waste No.	
a. RQ Hazardous Waste Solid, N.O.S. (D009), CRN-E, NA 9189		No. 001 Type CM		307		DOT		D009	
b.									
c.									
d.									
J. Additional Descriptions for Materials listed Above		K. Handling Codes for Wastes Listed Above							
a. Mercury contaminated debris		b. <input checked="" type="checkbox"/>		c. <input type="checkbox"/>		d. <input type="checkbox"/>			
15. Special Handling Instructions and Additional Information a. NDC profile no. V 76453, Work Order No. 132320									
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and state laws and regulations. If I am a large quantity generator, I certify that I have program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR if I am a small generator, I have made a good faith effort to minimize my waste and select the best waste management method that is available to me and that I can afford.		Printed/Typed Name James P. [Signature]		Signature [Signature]		Mo. 11 Day 11 Year 1991			
17. Transporter 1 (Acknowledgement of Receipt of Materials)		Printed/Typed Name David O. Ray		Signature [Signature]		Mo. 12 Day 28 Year 1988			
18. Transporter 2 (Acknowledgement or Receipt of Materials)		Printed/Typed Name		Signature		Mo. Day Year			
19. Discrepancy Indication Space									
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.		Printed/Typed Name		Signature		Mo. Day Year			



STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SOLID AND HAZARDOUS WASTE

HAZARDOUS WASTE MANIFEST

P.O. Box 12820, Albany, New York 12212

Form Approved. OMB No. 2050-0039. Expires 9-30-88

Please print or type.

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA No. NY 0011892735		Manifest Document No.		2. Page 1 of 1		Information in the shaded areas is not required by Federal Law.	
3. Generator's Name and Mailing Address Union Carbide Corp. Linda Division Foot of South Wood Avenue Linden, NJ 07036		6. US EPA ID Number NY 0054126164		A. State Manifest Document No. NY A755907 3		B. Generator's ID same			
4. Generator's Phone (201 862-2422)		7. Transporter 1 (Company Name) Freshhold Cartage, Inc.		C. State Transporter's ID same		D. Transporter's Phone 201 462-1001			
5. Transporter 2 (Company Name)		8. US EPA ID Number		E. State Transporter's ID		F. Transporter's Phone			
9. Designated Facility Name and Site Address SCA Chemical Services, Inc. 1550 Balmer Road Rosal City, NY 14107		10. US EPA ID Number NY 0049836679		G. State Facility's ID same		H. Facility's Phone 716 754-8231			
11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)				12. Containers		13. Total Quantity		14. Unit	
a. RQ Hazardous Waste Solid, N.O.S. (D009), ORM-E, RA 9189				No. Type		Quantity		Wt/Vol	
				0 0 1 C M		30		T 0009	
b.									
c.									
d.									
J. Additional Descriptions for Materials Listed Above				K. Handling Codes for Wastes Listed Above					
a. Mercury contaminated debris				a. <input checked="" type="checkbox"/> b. <input type="checkbox"/> c. <input type="checkbox"/> d. <input type="checkbox"/>					
b.				b. <input type="checkbox"/> d. <input type="checkbox"/>					
15. Special Handling Instructions and Additional Information a. NBC profile no. V 76453, Work Order No. 132321									
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and state laws and regulations. If I am a large quantity generator, I certify that I have program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR if I am a small generator, I have made a good faith effort to minimize my waste and select the best waste management method that is available to me and that I can afford.									
Printed/Typed Name		Signature		Mo.		Day		Year	
Y. ...		[Signature]		12		22		1988	
17. Transporter 1 (Acknowledgement of Receipt of Materials)									
Printed/Typed Name		Signature		Mo.		Day		Year	
D. ...		[Signature]		12		22		1988	
18. Transporter 2 (Acknowledgement or Receipt of Materials)									
Printed/Typed Name		Signature		Mo.		Day		Year	
19. Discrepancy Indication Space									
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.									
Printed/Typed Name		Signature		Mo.		Day		Year	



STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SOLID AND HAZARDOUS WASTE

HAZARDOUS WASTE MANIFEST

P.O. Box 12820, Albany, New York 12212

Form Approved. OMB No. 2050-0030. Expires 9-30-88

Please print or type.

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA No. N J D 0 1 1 8 9 2 7 3 6		Manifest Document No.		2. Page 1 of 1		Information in the shaded areas is not required by Federal Law.					
3. Generator's Name and Mailing Address Union Carbide Corp. - Linde Div., Foot of South Wood Ave., Linden, NJ 07036						A. State Manifest Document No. NY A 755901 9							
4. Generator's Phone (201) 862-7422						B. Generator's ID SDW							
5. Transporter 1 (Company Name) Freehold Cartage, Inc.						C. State Transporter's ID XL-61EF							
6. US EPA ID Number N J D 0 5 4 1 2 6 1 6 4						D. Transporter's Phone (201) 482-1801							
7. Transporter 2 (Company Name)						E. State Transporter's ID							
8. US EPA ID Number						F. Transporter's Phone ()							
9. Designated Facility Name and Site Address SCA Chemical Services, Inc., 1550 Balmer Road, Model City, NY 14107						G. State Facility's ID							
10. US EPA ID Number N Y D 0 4 9 8 3 6 6 7 9						H. Facility's Phone (716) 783-0231							
11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)						12. Containers		13. Total Quantity		14. Unit Wt/Vol		15. Waste No.	
a. RQ Hazardous waste solid, n.o.s. (D009), ORN-E, NA 9189						No. Type							
b.						0 0 1 G M 0 0 0 3 0							
c.													
d.													
J. Additional Descriptions for Materials Listed Above						K. Additional Descriptions for Materials Listed Above							
a.						b.							
15. Special Handling Instructions and Additional Information						a. MBC profile no. V 75433, Work Order No. 137319							
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and state laws and regulations.						If I am a large quantity generator, I have taken the steps to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and I have made a good faith effort to minimize my waste and select the best waste management method that is available to me and that							
Printed/Typed Name						Signature							
17. Transporter 1 (Acknowledgement or Receipt of Materials)						Signature							
Printed/Typed Name						Signature							
18. Transporter 2 (Acknowledgement or Receipt of Materials)						Signature							
Printed/Typed Name						Signature							
19. Discrepancy Indication Space													
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.													
Printed/Typed Name						Signature							
						Mo. Day Year							

NYA 755901 9



INTERNATIONAL
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September 2, 1988

RECEIVED
SEP -9 1988

State of New Jersey
Department of Environmental Protection (DEP)
Division of Hazardous Waste Management
Manifest Section
CN028
Trenton, New Jersey 08625

Dear Sirs:

Enclosed are New Jersey DEP's copies of manifests NYA755906 4 and NYA755907 3, as well as a xerox copy of manifest NYA755901 9. Please change the Generator's US EPA No. (Item 1) NJD011892735 to NJD011392735. The fourth digit should be a three (3), not an eight (8).

Because the transporter automatically removed the last three pages of the manifests for the Generator, the Generator does not have the appropriate manifest pages. The New York DEC indicated that any legible copies of the manifests would be acceptable, so we are sending Copy 7 to you for your records.

Please keep these copies along with this letter. I apologize for these errors and have taken steps to avoid their recurrence. Please call me if you have any questions or concerns regarding this matter. Thank you.

Very truly yours,

IT CORPORATION

Leah J. Webb
Project Manager
Remediation Project Management

enc/

Regional Office

165 Fieldcrest Avenue • P.O. Box 7809 • Edison, New Jersey 08818-7809 • 201-225-2000



STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SOLID AND HAZARDOUS WASTE

HAZARDOUS WASTE MANIFEST

P.O. Box 12820, Albany, New York 12212

Form Approved. OMB No. 2050-0039. Expires 9-30-88

Please print or type.

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA No. NY 0011892735		Manifest Document No.		2. Page 1 of 1		Information in the shaded areas is not required by Federal Law.	
3. Generator's Name and Mailing Address Union Carbide Corp Linda Division Foot of South Wood Avenue Linden, NJ 07036		4. Generator's Phone (201) 862-2422		6. US EPA ID Number NY 0054126164		A. State Manifest Document No. NY A 755906 4		B. Generator's ID No. 100	
5. Transporter 1 (Company Name) Freehold Cartage, Inc.		7. Transporter 2 (Company Name)		8. US EPA ID Number		C. State Transporter's ID No.		D. Transporter's Phone (800) 402-1001	
9. Designated Facility Name and Site Address SCA Chemical Services, Inc. 1550 Palmer Road Rosal City, NY 14107		10. US EPA ID Number NY 0049836679		H. Facility's Phone (716) 754-2200		E. State Transporter's ID No.		F. Transporter's Phone	
11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)		12. Containers		13. Total Quantity		14. Unit		15. Waste No.	
a. RQ Hazardous Waste Solid, H.O.S. (2009), ORN-E, NA 9189		001 CM		307		T		2009	
b.									
c.									
d.									
J. Additional Descriptions for Materials Listed Above		K. Handling Codes for Wastes Listed Above							
a. Mercury contaminated debris		L. <input checked="" type="checkbox"/> 1							
b.		M. <input type="checkbox"/> 2							
15. Special Handling Instructions and Additional Information a. NDC profile no. V 76453, Mark Order No. 132320									
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and state laws and regulations. If I am a large quantity generator, I certify that I have program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR if I am a small generator, I have made a good faith effort to minimize my waste and select the best waste management method that is available to me and that I can afford.		Printed/Typed Name		Signature		Mo.		Day Year	
17. Transporter 1 (Acknowledgement of Receipt of Materials)		Printed/Typed Name		Signature		Mo.		Day Year	
18. Transporter 2 (Acknowledgement or Receipt of Materials)		Printed/Typed Name		Signature		Mo.		Day Year	
19. Discrepancy Indication Space									
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.		Printed/Typed Name		Signature		Mo.		Day Year	

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SOLID AND HAZARDOUS WASTE

HAZARDOUS WASTE MANIFEST

P.O. Box 12820, Albany, New York 12212

Form Approved. OMB No. 2050-0039. Expires 9-30-88

Please print or type.

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA No. NY 0012092735		Manifest Document No.		2. Page 1 of 1		Information in the shaded areas is not required by Federal Law.	
3. Generator's Name and Mailing Address Union Carbide Corp. Linde Division Foot of South Wood Avenue Linden, NJ 07036		4. Generator's Phone (201 882-2422)		6. US EPA ID Number NY 0004982667		A. State Manifest Document No. NY A 755907 3		B. Generator's ID 0000	
5. Transporter 1 (Company Name) Freshhold Cartage, Inc.		7. Transporter 2 (Company Name)		8. US EPA ID Number		C. State Transporter's ID		D. Transporter's Phone (201 462-1001)	
9. Designated Facility Name and Site Address SCA Chemical Services, Inc. 1550 Balmar Road Model City, NY 14107		10. US EPA ID Number NY 0004982667		E. State Transporter's ID		F. Transporter's Phone		G. State Facility's ID	
11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)		12. Containers		13. Total Quantity		14. Unit		15. Waste No.	
a. RQ Hazardous Waste Solid, H.O.S. (D009), CM-E, RA 9189		No. 001 Type CM		30		Y		D009	
b.									
c.									
d.									
J. Additional Descriptions for Materials Listed Above		K. Handling Codes for Wastes Listed Above							
a. Mercury contaminated debris		b. Mercury contaminated debris							
15. Special Handling Instructions and Additional Information a. HBC profile no. V 76453, Work Order No. 132521									
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and state laws and regulations. If I am a large quantity generator, I certify that I have program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR if I am a small generator, I have made a good faith effort to minimize my waste and select the best waste management method that is available to me and that I can afford.		Printed/Typed Name Y		Signature [Signature]		Mo. 12 Day 24 Year 87			
17. Transporter 1 (Acknowledgement of Receipt of Materials)		Printed/Typed Name [Name]		Signature [Signature]		Mo. 12 Day 24 Year 87			
18. Transporter 2 (Acknowledgement or Receipt of Materials)		Printed/Typed Name [Name]		Signature [Signature]		Mo. 12 Day 24 Year 87			
19. Discrepancy Indication Space									
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.		Printed/Typed Name [Name]		Signature [Signature]		Mo. 12 Day 24 Year 87			



STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SOLID AND HAZARDOUS WASTE
HAZARDOUS WASTE MANIFEST
P.O. Box 12820, Albany, New York 12212

Form Approved. OMB No. 2050-0008. Expires 9-30-88

Please print or type.

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA No. NJ D 0 1 1 8 9 2 7 3 5		Manifest Document No.		2. Page 1 of 1		Information in the shaded areas is not required by Federal Law.					
3. Generator's Name and Mailing Address Union Carbide Corp. - Linde Div., Foot of South Wood Ave., Linden, NJ 07036						A. State Manifest Document No. NY A 755901 9							
4. Generator's Phone (201) 862-2429						B. Generator's ID 300							
5. Transporter 1 (Company Name) Freehold Cartage, Inc.						C. State Transporter's ID AL-615-F							
6. US EPA ID Number N J D 0 5 4 1 2 6 1 6 4						D. Transporter's Phone (908) 462-1801							
7. Transporter 2 (Company Name)						E. State Transporter's ID							
8. US EPA ID Number						F. Transporter's Phone ()							
9. Designated Facility Name and Site Address SCA Chemical Services, Inc., 1550 Balmer Road, Model City, NY 14107						G. State Facility's ID							
10. US EPA ID Number NY D 0 4 9 8 3 6 6 7 9						H. Facility's Phone (716) 784-0231							
11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)						12. Containers		13. Total Quantity		14. Unit Wt/Vol		15. Waste No.	
a. RQ Hazardous waste solid, n.o.s. (D009), ORM-E, NA 9189						No. Type							
						0 0 1 C M		0 0 0 3 0					
b.													
c.													
d.													
J. Additional Descriptions for Materials listed Above													
a.													
b.													
15. Special Handling Instructions and Additional Information													
a. NBC profile no. V 76452, Work Order No. 132319													
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and state laws and regulations.													
If I am a large quantity generator, I have taken the steps to reduce the volume and toxicity of waste generated to the degree that have determined to be economically practicable and have made a good faith effort to minimize the present and future threat to human health and the environment.													
Printed/Typed Name						Signature		Mo. Day Year					
17. Transporter 1 (Acknowledgement or Receipt of Materials)						Signature		Mo. Day Year					
Printed/Typed Name						Signature		Mo. Day Year					
18. Transporter 2 (Acknowledgement or Receipt of Materials)						Signature		Mo. Day Year					
Printed/Typed Name						Signature		Mo. Day Year					
19. Discrepancy Indication Space													
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.													
Printed/Typed Name						Signature		Mo. Day Year					

NY A 755901 9



INTERNATIONAL
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CORPORATION

RECEIVED

SEP -9 1988

September 2, 1988

SCA Chemical Services, Inc.
1550 Balmer Road
Model City, New York 14107

Attn.: Manifest Section

Dear Sirs:

Enclosed please find copies of manifests NYA755878 5, NYA755879 4, and NYA755882 1. Attached to these manifests are the corresponding Landburial Ban Waste Certification Forms. These forms are being forwarded to you because we are not certain you received them with the shipment. If you have, please discard them.

Please call me at (201) 225-2000 if you have additional questions or concerns.

Very truly yours,

IT CORPORATION

Leah J. Webb
Project Manager
Remediation Project Management

enc/

Regional Office

165 Fieldcrest Avenue • P.O. Box 7809 • Edison, New Jersey 08818-7809 • 201-225-2000



STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SOLID AND HAZARDOUS WASTE

HAZARDOUS WASTE MANIFEST

P.O. Box 12820, Albany, New York 12212

Form Approved. OMB No. 2050-0039. Expires 9-30-88

Please print or type.

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA No. NJ 001 1 3 0 2 7 2 6 XXXXX		Manifest Document No. 1		2. Page 1 of 1		Information in the shaded areas is not required by Federal Law.					
3. Generator's Name and Mailing Address Sales Carbide Corp. - Linda Biv., Post of South Wood Ave., Linden, NJ 07036						A. State Manifest Document No. NY A 755878 5							
4. Generator's Phone (201) 862-2422						B. Generator's ID SAME							
5. Transporter 1 (Company Name) American Industrial Marine						C. State Transporter's ID NJ DEP 10278							
6. US EPA ID Number NJ 0901073664						D. Transporter's Phone (201) 862-2422							
7. Transporter 2 (Company Name)						E. State Transporter's ID 756-4300							
8. US EPA ID Number						F. Transporter's Phone ()							
9. Designated Facility Name and Site Address SCA Chemical Services, Inc., 1560 Palmer Road, Model Elm City, NY 14187						G. State Facility's ID							
10. US EPA ID Number NY 049836679						H. Facility's Phone (716) 764-0231							
11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)						12. Containers		13. Total Quantity		14. Unit		15. Waste No.	
a. 20 Hazardous waste solid, n.o.s. (9009), ORM-E NA 9189						No. Type		Quantity		Unit		Waste No.	
						0 0 1 C XXXX 20 Y 0009							
b.													
c.													
d.													
J. Additional Descriptions for Materials listed Above Mercury contaminated debris						K. Handling Codes for Wastes Listed Above							
a						b		c		d			
b													
15. Special Handling Instructions and Additional Information a. REMOC profile no. Y 76453, Work Order No. 130183 Date # 1007W NYJA 303													
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and state laws and regulations. If I am a large quantity generator, I certify that I have program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR if I am a small generator, I have made a good faith effort to minimize my waste and select the best waste management method that is available to me and that I can afford.													
Printed/Typed Name						Signature		Mo.		Day		Year	
17. Transporter 1 (Acknowledgement of Receipt of Materials)													
Printed/Typed Name Andrew Sissick						Signature		Mo.		Day		Year	
18. Transporter 2 (Acknowledgement or Receipt of Materials)													
Printed/Typed Name						Signature		Mo.		Day		Year	
19. Discrepancy Indication Space													
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.													
Printed/Typed Name						Signature		Mo.		Day		Year	

(To be attached to the Manifest Form for first time shipments, annually, when the waste stream composition changes, or when otherwise required by NYSDEC).

Part A (General)

1. Describe the process producing the waste (including the representative SIC code).

Dismantlement of 30,000 psi compressor, receivers, and tank which were previously contaminated with mercury. Mercury was used to produce the hydrogen gas pumped through a hydrogen filling system located at this plant.

2. Is this material a "one time" shipment or a continuing waste stream?

[one time
6 to 10 20-ton loads,

3. Is this material from an inactive hazardous waste site or spill cleanup?

no

4. a. Does this waste contain organic chemicals?

no

- b. If so, does this waste contain:

1. aromatics?
2. halogenated organics?
3. nitrogenated organics?
4. low molecular weight organics?

no

no

no

no

5. Does this stream contain any organic materials listed in 6NYCRR 366.4(d)(5) and 366.4(d)(6) (P-list or U-list)? If so, list them:

no

If any of the answers to question 4 or 5 were yes or unknown, complete Part B of this certification for those classes of materials which are known or suspected to be in the waste. If you answered no to all of these questions; please sign the following certification:

BASED ON MY KNOWLEDGE OF THE PROCESS AND CHEMICALS USED IN GENERATING THE WASTE, I CERTIFY THAT THESE WASTES QUALIFY FOR LANDBURIAL UNDER THE NEW YORK STATE LANDBURIAL BAN AS DESCRIBED ON THIS FORM. I FURTHER CERTIFY THAT I WILL RESUBMIT THIS FORM IF THE WASTE STREAM COMPOSITION CHANGES IN A WAY WHICH MIGHT INCREASE THE CONCENTRATIONS OF ORGANIC CHEMICALS IN THE WASTE STREAM.

IT IS A CRIME, PUNISHABLE AS A CLASS A MISDEMEANOR UNDER THE LAWS OF THE STATE OF NEW YORK, FOR A PERSON, IN AND BY A WRITTEN INSTRUMENT, TO KNOWINGLY MAKE A FALSE STATEMENT, OR TO MAKE A STATEMENT WHICH SUCH PERSON DOES NOT BELIEVE TO BE TRUE.

Name: Edmund L. Grzybowski
(Please type or print)

Signature: X Edmund L. Grzybowski

Title:

PUMP OPERATOR

Date:

6/20/88

Firm:

Union Carbide Corp. - Linde Div.

Address:

Linden, NJ

Part 8 (Detailed Analysis)

- i. Composition of waste as it is generated and prior to any dilution with absorbant, solidifying agent or other material as determined by the New York State Department of Environmental Conservation "APPROVED ANALYTICAL PROCEDURES FOR DETERMINING THE CONTENT OF CONSTITUENTS BANNED FROM LANDBURIAL" revised May 1985.

2. Method and date of last analysis (analysis must conform to the "Approved Analytical Procedures for Determining the Content of Constituents Banned from Landburial" and dated within one year).

BASED ON A COMBINATION OF NYSDEC APPROVED ANALYTICAL METHODS AND MY KNOWLEDGE OF THE PROCESS AND CHEMICALS USED IN GENERATING THE WASTE, I CERTIFY THAT THIS WASTE QUALIFIES FOR LAND DISPOSAL UNDER THE NEW YORK STATE LANDBURIAL BAN AS DESCRIBED ON THIS FORM. I FURTHER CERTIFY THAT I WILL RESUBMIT THIS FORM IF THE WASTE STREAM COMPOSITION CHANGES IN A WAY WHICH MIGHT INCREASE THE CONCENTRATIONS OF ORGANIC CHEMICALS IN THE WASTE STREAM.

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Name: _____
(Please type or print)

Signature: _____

Title: _____

Date: _____

Firm: _____

Address: _____



JUN 21 1982

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SOLID AND HAZARDOUS WASTE

HAZARDOUS WASTE MANIFEST

P.O. Box 12820, Albany, New York 12212

Form Approved. OMB No. 2050-0039. Expires 9-30-88

Please print or type.

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA No.	Manifest Document No.	2. Page 1	Information in the shaded areas is not required by Federal Law	
3. Generator's Name and Mailing Address Union Carbide Corp. - Linden Div., Foot of South Wood Ave., Linden, NJ 07036		4. Generator's US EPA ID Number N J 0 0 1 1 3 9 2 7 3 5		A. State Manifest Document No. NY A755879 4		
4. Generator's Phone (201) 862-2422		5. US EPA ID Number N J 0 9 8 1 2 7 3 6 6 4		B. Generator's ID 1		
5. Transporter 1 (Company Name) American Industrial Marine		6. US EPA ID Number N J 0 9 8 1 2 7 3 6 6 4		C. State Transporter's ID 5-12340		
7. Transporter 2 (Company Name)		8. US EPA ID Number		D. Transporter's Phone (201) 825-0902		
9. Designated Facility Name and Site Address SCA Chemical Services, Inc., 1550 Balmer Road, Model City, NY 14107		10. US EPA ID Number N Y 0 4 9 8 3 6 6 7 9		E. State Transporter's ID		
				F. Transporter's Phone ()		
				G. State Facility's ID		
				H. Facility's Phone (716) 764-8231		
11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)		12. Containers		13. Total Quantity	14. Unit	I. Waste No.
a. NO Hazardous waste solid, n.o.s. (2009), 600-E, BA 9180		No. Type			Wt/Vol	
		9 0 1 C M X 2 3 0			Y	2009
b.						
c.						
d.						
J. Additional Descriptions for Materials listed Above Mercury contaminated debris		K. Handling Codes for Wastes Listed Above				
a		c		a	b	c
b		d		b	c	d
15. Special Handling Instructions and Additional Information a. HSC profile no. 7 76453, Work Order No. 136152						
JA 203						
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and state laws and regulations. If I am a large quantity generator, I certify that I have program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR if I am a small generator, I have made a good faith effort to minimize my waste and select the best waste management method that is available to me and that I can afford.						
Printed/Typed Name		Signature		Mo. Day Year		
17. Transporter 1 (Acknowledgement of Receipt of Materials)		Signature		Mo. Day Year		
Printed/Typed Name		Signature		Mo. Day Year		
18. Transporter 2 (Acknowledgement or Receipt of Materials)		Signature		Mo. Day Year		
Printed/Typed Name		Signature		Mo. Day Year		
19. Discrepancy Indication Space						
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.						
Printed/Typed Name		Signature		Mo. Day Year		

NY A 755879 4

Landburial Ban
WASTE CERTIFICATION FORM

WORK ORDER NO. 130152

CWM-WASTE CODE: V 76453

(To be attached to the Manifest Form for first time shipments, annually, when the waste stream composition changes, or when otherwise required by NYSDEC).

Part A (General)

1. Describe the process producing the waste (including the representative SIC code).

Dismantlement of 30,000 psi compressor, receivers, and tank which were previously contaminated with mercury. Mercury was used to produce the hydrogen gas pumped through a hydrogen filling system located at this plant.

2. Is this material a "one time" shipment or a continuing waste stream?

[one time
6 to 10 20-ton loads,

3. Is this material from an inactive hazardous waste site or spill cleanup?

no

4. a. Does this waste contain organic chemicals?

no

- b. If so, does this waste contain:

1. aromatics?
2. halogenated organics?
3. nitrogenated organics?
4. low molecular weight organics?

no

no

no

no

5. Does this stream contain any organic materials listed in 6NYCRR 366.4(d)(5) and 366.4(d)(6) (P-list or U-list)? If so, list them:

no

If any of the answers to question 4 or 5 were yes or unknown, complete Part B of this certification for those classes of materials which are known or suspected to be in the waste. If you answered no to all of these questions; please sign the following certification:

BASED ON MY KNOWLEDGE OF THE PROCESS AND CHEMICALS USED IN GENERATING THE WASTE, I CERTIFY THAT THESE WASTES QUALIFY FOR LANDBURIAL UNDER THE NEW YORK STATE LANDBURIAL BAN AS DESCRIBED ON THIS FORM. I FURTHER CERTIFY THAT I WILL RESUBMIT THIS FORM IF THE WASTE STREAM COMPOSITION CHANGES IN A WAY WHICH MIGHT INCREASE THE CONCENTRATIONS OF ORGANIC CHEMICALS IN THE WASTE STREAM.

IT IS A CRIME, PUNISHABLE AS A CLASS A MISDEMEANOR UNDER THE LAWS OF THE STATE OF NEW YORK, FOR A PERSON, IN AND BY A WRITTEN INSTRUMENT, TO KNOWINGLY MAKE A FALSE STATEMENT, OR TO MAKE A STATEMENT WHICH SUCH PERSON DOES NOT BELIEVE TO BE TRUE.

Name: Edmund L. Grzybowski
(Please type or print)

Signature: [Signature]

Title: PUMP OPERATOR

Date: 6/20/88

Firm: Union Carbide Corp.- Linde Div.

Address: Linden, NJ

Part 8 (Detailed Analysis)

1. Composition of waste as it is generated and prior to any dilution with absorbant, solidifying agent or other material as determined by the New York State Department of Environmental Conservation "APPROVED ANALYTICAL PROCEDURES FOR DETERMINING THE CONTENT OF CONSTITUENTS BANNED FROM LANOBURIAL" revised May 1985.

2. Method and date of last analysis (analysis must conform to the "Approved Analytical Procedures for Determining the Content of Constituents Banned from Landburial" and dated within one year).

BASED ON A COMBINATION OF NYSDEC APPROVED ANALYTICAL METHODS AND MY KNOWLEDGE OF THE PROCESS AND CHEMICALS USED IN GENERATING THE WASTE, I CERTIFY THAT THIS WASTE QUALIFIES FOR LAND DISPOSAL UNDER THE NEW YORK STATE LANOBURIAL BAN AS DESCRIBED ON THIS FORM. I FURTHER CERTIFY THAT I WILL RESUBMIT THIS FORM IF THE WASTE STREAM COMPOSITION CHANGES IN A WAY WHICH MIGHT INCREASE THE CONCENTRATIONS OF ORGANIC CHEMICALS IN THE WASTE STREAM.

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Name: _____
(Please type or print)

Signature: _____

Title: _____

Date: _____

Firm: _____

Address: _____

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SOLID AND HAZARDOUS WASTE
HAZARDOUS WASTE MANIFEST
P.O. Box 12820, Albany, New York 12212

Form Approved, OMB No. 2050-0039. Expires 9-30-93

Please print or type.

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA No. NY 001139273500101		Manifest Document No. 9		2. Page 1 9		Information in the shaded areas is not required by Federal Law					
3. Generator's Name and Mailing Address Union Carbide Corp. - Linden Div., Feet of South Wood Ave., Linden, NJ 07036						A. State Manifest Document No. NY A 755882 1							
4. Generator's Phone (201) 862-2422						B. Generator's ID SAE							
5. Transporter 1 (Company Name) American Industrial Marine						C. State Transporter's ID ADPES 10376							
6. US EPA ID Number NY 00981973664						D. Transporter's Phone (201) 862-2422							
7. Transporter 2 (Company Name)						E. State Transporter's ID 756-4200							
8. US EPA ID Number						F. Transporter's Phone ()							
9. Designated Facility Name and Site Address SCA Chemical Services, Inc., 1660 Salmer Road, Roseland City, NJ 14107						G. State Facility's ID							
10. US EPA ID Number NY 0049036679						H. Facility's Phone (716) 754-0231							
11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number) a. 00 Hazardous waste solid, n.o.s. (9009), ORM-L, NA 9189						12. Containers		13. Total		14. Unit		15. I.	
						No. Type		Quantity		Wt/Vol		Waste No.	
						3012		20030		Y		9009	
J. Additional Descriptions for Materials listed Above Mercury contaminated fabric						K. Handling Codes for Wastes Listed Above							
a						a		c					
b						b		d					
15. Special Handling Instructions and Additional Information a. MSD profile no. Y 76483, Work Order No. 131046 TA #2974119 CONT. #3001 1/2 LIC #7679 C2													
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. If I am a large quantity generator, I certify that I have program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR if I am a small generator, I have made a good faith effort to minimize my waste and select the best waste management method that is available to me and that I can afford.													
Printed/Typed Name				Signature				Mo. Day Year					
17. Transporter 1 (Acknowledgement of Receipt of Materials)													
Printed/Typed Name ANDREW SISSICK				Signature				Mo. Day Year 8/11/88					
18. Transporter 2 (Acknowledgement or Receipt of Materials)													
Printed/Typed Name				Signature				Mo. Day Year					
19. Discrepancy Indication Space													
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.													
Printed/Typed Name				Signature				Mo. Day Year					

NY A 755882 1

(To be attached to the Manifest Form for first time shipments, annually, when the waste stream composition changes, or when otherwise required by NYSDEC).

Part A (General)

1. Describe the process producing the waste (including the representative SIC code).

Dismantlement of 30,000 psi compressor, receivers, and tank which were previously contaminated with mercury. Mercury was used to produce the hydrogen gas pumped through a hydrogen filling system located at this plant.

2. Is this material a "one time" shipment or a continuing waste stream?

[one time
6 to 10 20-ton loads,

3. Is this material from an inactive hazardous waste site or spill cleanup?

no

4. a. Does this waste contain organic chemicals?

no

- b. If so, does this waste contain:

1. aromatics?
2. halogenated organics?
3. nitrogenated organics?
4. low molecular weight organics?

no

no

no

no

5. Does this stream contain any organic materials listed in 6NYCRR 366.4(d)(5) and 366.4(d)(6) (P-list or U-list)? If so, list them:

no

If any of the answers to question 4 or 5 were yes or unknown, complete Part B of this certification for those classes of materials which are known or suspected to be in the waste. If you answered no to all of these questions; please sign the following certification:

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Name: YANINA BASHKIN
(Please type or print)

Signature: X [Signature]

Title: SUPERVISOR OF OPERATIONS Date: 7/11/88

Firm: Union Carbide Corp. - Linde Div.

Address: Linden, NJ

Part 3 (Detailed Analysis)

1. Composition of waste as it is generated and prior to any dilution with absorbant, solidifying agent or other material as determined by the New York State Department of Environmental Conservation "APPROVED ANALYTICAL PROCEDURES FOR DETERMINING THE CONTENT OF CONSTITUENTS BANNED FROM LANDBURIAL" revised May 1985.

2. Method and date of last analysis (analysis must conform to the "Approved Analytical Procedures for Determining the Content of Constituents Banned from Landburial" and dated within one year).

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Name: _____
(Please type or print)

Signature: _____

Title: _____

Date: _____

Firm: _____

Address: _____



August 3, 1988

RECEIVED
SEP -9 1988

Mr. Chan Baldeo
State of New Jersey
Department of Environmental Protection
Division of Hazardous Waste Management
Manifest Section
CN028
Trenton, New Jersey 08625

RE: Manifest Number NYA755886 6

9/2/88
NOTE - ORIGINAL LETTER
WAS SENT WITH A
COPY OF MANIFEST -
THIS IS A COPY OF
THAT LETTER WITH
THE ORIGINAL
MANIFEST.

AW
(I HAVE JUST
RECEIVED THIS FROM
THE GENERATOR)

Dear Mr. Baldeo:

Enclosed please find a copy of manifest NYA755886 6. There are several errors associated with this New York manifest. The primary error is that mercury waste was shipped from Linden, New Jersey to Bethlehem Apparatus Company, Inc. (Bethlehem Apparatus) in Hellertown, Pennsylvania on a New York manifest. Bethlehem Apparatus accepted the material for recycling on the New York manifest because Pennsylvania DER does not require manifesting of materials that are to be recycled. Following our telephone conversation today, I understand that a New Jersey manifest would have been the appropriate shipping document. I sincerely apologize for this error and will make every effort to ensure that this error is not repeated.

Mr. Bruce Lawrence of Bethlehem Apparatus sent the disposer state copy of this manifest to Pennsylvania DER and the generator state copy to New Jersey DEP. During my telephone conversation with you today, you indicated that I should write explaining the error and that I need not prepare an additional document for this shipment. Please contact me if you fail to receive the appropriate copy of this document or if there are any other associated problems.

I have also noticed three other errors on this document. In Section 1., Generator's US EPA No. is given as NJD011892735. The correct entry is NJD011392735 (the fourth digit should be a three, not an eight). In Section K., Handling Codes for Wastes Listed Above, item a. is given as L ("landfill"). The correct entry is R ("Material recovery of more than 75 percent of the total material"). This latter entry is not required of the generator on a New Jersey manifest; however, it is required by New York. In section E., the State Transporter's ID has been left blank. The correct entry is NJDEP S-10335.

Regional Office

165 Fieldcrest Avenue • P.O. Box 7809 • Edison, New Jersey 08818-7809 • 201-225-2000

Page Two

NJDEP letter: Manifest NYA755886 6

Please contact me at (201) 225-2000, extension 140, if you have any questions or concerns regarding these errors. I am sorry that these errors occurred and, again, am making every effort to ensure that they are not repeated. Thank you for your consideration.

Very truly yours,

IT CORPORATION

Leah J. Webb

~~Leah J. Webb~~

Project Manager

Remediation Project Management

enc/

cc: R. O'Neal, Union Carbide
T. Hernon, IT
E. Timmes, NEPCCO/IT
P. Feeney, NEPCCO/IT



STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SOLID AND HAZARDOUS WASTE

HAZARDOUS WASTE MANIFEST

P.O. Box 12820, Albany, New York 12212

Form Approved OMB No. 2050-0038. Expires 9-30-88

Please print or type.

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA No. NJ D 011189273500102		Manifest Document No. 1		2. Page 1 of 1		Information in the shaded areas is not required by Federal Law.					
3. Generator's Name and Mailing Address UNION CARBIDE CORP. - LINDE DIV. FOOT OF S. WOOD AVE. LINCOLN, NJ 07076						A. State Manifest Document No. NY A 755886 B							
4. Generator's Phone (201) 862-8242						B. Generator's ID No. (if available) SAME							
5. Transporter 1 (Company Name) IT CORP.						C. State Transporter's ID No. (if available)							
6. US EPA ID Number NJ 011189273500102						D. Transporter's Phone (201) 396-7800							
7. Transporter 2 (Company Name)						E. State Transporter's ID No. (if available)							
8. US EPA ID Number						F. Transporter's Phone							
9. Designated Facility Name and Site Address RETALEXEM APPARATUS COMPANY, INC. HELLEKTOWN, PA						G. State Facility's ID No. (if available)							
10. US EPA ID Number						H. Facility's Phone (215) 238-7034							
11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number) a. RQ HAZARDOUS WASTE LIQUID, N.O.S. (0009), ORII-E, NA9189						12. Containers No. Type		13. Total Quantity		14. Unit Wt/Vol		15. Waste No.	
						7 CY 00536 P						D009	
J. Additional Descriptions for Materials listed Above a. MERCURY						K. Handling Codes for Wastes listed Above a. L							
b.						b.							
15. Special Handling Instructions and Additional Information RELEASE NO. 201-11 IRD SHIPPING NO. IRD 006654													
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and state laws and regulations. If I am a large quantity generator, I certify that I have program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR if I am a small generator, I have made a good faith effort to minimize my waste and select the best waste management method that is available to me and that I can afford.													
Printed/Typed Name						Signature						Mo. Day Year	
17. Transporter 1 (Acknowledgement of Receipt of Materials)													
Printed/Typed Name						Signature						Mo. Day Year	
18. Transporter 2 (Acknowledgement or Receipt of Materials)													
Printed/Typed Name						Signature						Mo. Day Year	
19. Discrepancy Indication Space													
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.													
Printed/Typed Name						Signature						Mo. Day Year	



RECEIVED.

SEP - 9 1988

RAO —

ADH —

Comments?

September 2, 1988

Pennsylvania Department of Environmental Resources
Bureau of Waste Management
P. O. Box 2063
Harrisburg, PA 17120

Attn.: Manifest Section

Dear Sirs:

Enclosed please find a copy of manifest NYA755886 6 and of my letter to the New Jersey Department of Environmental Protection. The letter explains the problems associated with this manifest.

Please call me at (201) 225-2000 if you have any questions or concerns not addressed in the enclosed letter. Thank you.

Very truly yours,

IT CORPORATION

Leah J. Webb

Leah J. Webb
Project Manager
Remediation Project Management

enc/

Regional Office

165 Fieldcrest Avenue • P.O. Box 7809 • Edison, New Jersey 08818-7809 • 201-225-2000



August 3, 1988

Mr. Chan Baldeo
State of New Jersey
Department of Environmental Protection
Division of Hazardous Waste Management
Manifest Section
CN028
Trenton, New Jersey 08625

RE: Manifest Number NYA755886 6

Dear Mr. Baldeo:

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Mr. Bruce Lawrence of Bethlehem Apparatus sent the disposer state copy of this manifest to Pennsylvania DER and the generator state copy to New Jersey DEP. During my telephone conversation with you today, you indicated that I should write explaining the error and that I need not prepare an additional document for this shipment. Please contact me if you fail to receive the appropriate copy of this document or if there are any other associated problems.

I have also noticed three other errors on this document. In Section 1., Generator's US EPA No. is given as NJD011892735. The correct entry is NJD011392735 (the fourth digit should be a three, not an eight). In Section K., Handling Codes for Wastes Listed Above, item a. is given as L ("landfill"). The correct entry is R ("Material recovery of more than 75 percent of the total material"). This latter entry is not required of the generator on a New Jersey manifest; however, it is required by New York. In section E., the State Transporter's ID has been left blank. The correct entry is NJDEP S-10335.

Regional Office

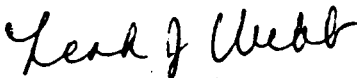
165 Fieldcrest Avenue • P.O. Box 7809 • Edison, New Jersey 08818-7809 • 201-225-2000

Page Two
NJDEP letter: Manifest NYA755886 6

Please contact me at (201) 225-2000, extension 140, if you have any questions or concerns regarding these errors. I am sorry that these errors occurred and, again, am making every effort to ensure that they are not repeated. Thank you for your consideration.

Very truly yours,

IT CORPORATION



~~Leah J. Webb~~

Project Manager
Remediation Project Management

enc/

cc: R. O'Neal, Union Carbide
T. Hernon, IT
E. Timmes, NEPCCO/IT
P. Feeney, NEPCCO/IT



Union Carbide Corporation
Linde Division
308 Harper Drive, Caller Service 13
Moorestown, New Jersey 08057
Telephone (609) 778-6200

RECEIVED

OCT 14 1988

October 11, 1988

UNION CARBIDE CORP.
SOMERSET REGION OFFICE
SOMERSET, N.J.

NYS DEC - Division of Hazardous Substances Regulations
Manifest Section
Post Office Box 12820
Albany, New York 12212

Attn: Lawrence J Nadler, P.C.

Dear Mr. Nadler:

Enclosed is the "Disposer State" copy of Hazardous Waste Manifest numbered NY A 755904 6 which corresponds to a shipment of mercury contaminated debris to SCA Chemical Services, Inc., on 8/8/88. The facility to which the material was shipped is located at 1550 Balmer Road in Model City, New York 14107.

Should you require any additional information, please contact me at your earliest convenience.

Very truly yours,

UNION CARBIDE CORPORATION
Linde Division

R. A. O'Neal
Region Technical Supervisor
Packaged Gases & Distributors

RAO:mr
RA01

Enclosure

cc: N. A. DiFranco
A. A. Galvan
Y. Bashir



STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SOLID AND HAZARDOUS WASTE

HAZARDOUS WASTE MANIFEST

P.O. Box 12820, Albany, New York 12212

Form Approved. OMB No. 2050-0039. Expires 9-30-88

Please print or type.

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA No. N J D 0 1 1 2 9 2 7 3 5		Manifest Document No. 0 1 1 2 9 2 7 3 5		2. Page 1 of 1		Information in the shaded areas is not required by Federal Law.	
3. Generator's Name and Mailing Address Union Carbide Corp. Linde Division Foot of South Wood Avenue Linden, NJ 07036		A. State Manifest Document No. NY A 755904 6		B. Generator's ID SAME		C. State Transporter's ID 222-1GF		D. Transporter's Phone (201) 462-1001	
4. Generator's Phone (201) 862-2422		5. Transporter 1 (Company Name) Freehold Cartage, Inc.		6. US EPA ID Number N J D 0 5 4 1 2 6 1 6 4		E. State Transporter's ID		F. Transporter's Phone ()	
7. Transporter 2 (Company Name)		8. US EPA ID Number		9. Designated Facility Name and Site Address SCA Chemical Services, Inc. 1550 Balmer Road Model City, NY 14107		10. US EPA ID Number N Y D 0 4 9 8 3 6 6 7 9		G. State Facility's ID	
11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)		12. Containers		13. Total Quantity		14. Unit		15. Waste No.	
a. RQ Hazardous Waste Solid, N.O.S. (D009), ORM-E, NA 9189		No. Type 0 0 1 C M		30		Y		D009	
b.									
c.									
d.									
J. Additional Descriptions for Materials listed Above		K. Handling Codes for Wastes Listed Above		a. L		c.		d.	
a. Mercury contaminated debris		b.		c.		d.			
15. Special Handling Instructions and Additional Information		a. MDC profile no. Y 76453, Mark Order No. 133289		NYJA113		NYDEP 2255-21671			
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable International and national government regulations and state laws and regulations. If I am a large quantity generator, I certify that I have program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR if I am a small generator, I have made a good faith effort to minimize my waste and select the best waste management method that is available to me and that I can afford.									
Printed/Typed Name RA O'NEAL		Signature <i>RA O'Neal</i>		Mo. Day Year 11 11 88					
17. Transporter 1 (Acknowledgement of Receipt of Materials)		Printed/Typed Name JAY KETCHAM		Signature <i>Jay Ketcham</i>		Mo. Day Year 08 08 88			
18. Transporter 2 (Acknowledgement or Receipt of Materials)		Printed/Typed Name		Signature		Mo. Day Year			
19. Discrepancy Indication Space									
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.									
Printed/Typed Name		Signature		Mo. Day Year					



August 3, 1988

RECEIVED
AUG 19 1988

CC: N.A. D. FRANCO
A.A. GALVAN

RECEIVED

AUG 19 1988

UNION CARBIDE
SOMERSET
SOMERSET
AUG 24 1988

N.A. DiFRA

Mr. Randy O'Neal
Union Carbide Corporation
Linde Division
308 Harper Drive
Moorestown, New Jersey 08057

RE: Linden, New Jersey Plant Manifests

Dear Randy:

I am writing to apologize for the manifest errors that occurred during shipment of your Linden plant's waste materials. We at IT Corporation are implementing safeguards in order to prevent these errors from recurring. Such safeguards will include proofreading of manifests by project managers and discussing proper procedures with subcontracted transporters before any hazardous waste shipments are performed.

Everyone at IT Corporation has enjoyed working with Union Carbide Corporation and all of its representatives. Union Carbide is truly one of IT's favorite clients, and we certainly want to continue providing you with the best service possible. We cannot guarantee that we will not make any mistakes, but we will do our best to minimize, to avoid repetition of, and to quickly and efficiently correct errors.

Enclosed with this letter is a copy of the letter to NJDEP which we discussed earlier today.

Please call me if you have any questions or concerns regarding any work we have performed for you. I look forward to continuing our work with you. Thank you.

Very truly yours,

IT CORPORATION

Leah J. Webb
Project Manager
Remediation Project Management

enc/

cc: T. Hernon, IT

Regional Office

165 Fieldcrest Avenue • P.O. Box 7809 • Edison, New Jersey 08818-7809 • 201-225-2000



INTERNATIONAL
TECHNOLOGY
CORPORATION

August 3, 1988

Mr. Chan Baldeo
State of New Jersey
Department of Environmental Protection
Division of Hazardous Waste Management
Manifest Section
CN028
Trenton, New Jersey 08625

RE: Manifest Number NYA755886 6

Dear Mr. Baldeo:

Enclosed please find a copy of manifest NYA755886 6. There are several errors associated with this New York manifest. The primary error is that mercury waste was shipped from Linden, New Jersey to Bethlehem Apparatus Company, Inc. (Bethlehem Apparatus) in Hellertown, Pennsylvania on a New York manifest. Bethlehem Apparatus accepted the material for recycling on the New York manifest because Pennsylvania DER does not require manifesting of materials that are to be recycled. Following our telephone conversation today, I understand that a New Jersey manifest would have been the appropriate shipping document. I sincerely apologize for this error and will make every effort to ensure that this error is not repeated.

Mr. Bruce Lawrence of Bethlehem Apparatus sent the disposer state copy of this manifest to Pennsylvania DER and the generator state copy to New Jersey DEP. During my telephone conversation with you today, you indicated that I should write explaining the error and that I need not prepare an additional document for this shipment. Please contact me if you fail to receive the appropriate copy of this document or if there are any other associated problems.

I have also noticed three other errors on this document. In Section 1., Generator's US EPA No. is given as NJD011892735. The correct entry is NJD011392735 (the fourth digit should be a three, not an eight). In Section K., Handling Codes for Wastes Listed Above, item a. is given as L ("landfill"). The correct entry is R ("Material recovery of more than 75 percent of the total material"). This latter entry is not required of the generator on a New Jersey manifest; however, it is required by New York. In section E., the State Transporter's ID has been left blank. The correct entry is NJDEP S-10335.

Regional Office

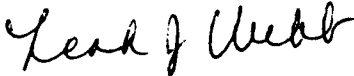
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Page Two
NJDEP letter: Manifest NYA755886 6

Please contact me at (201) 225-2000, extension 140, if you have any questions or concerns regarding these errors. I am sorry that these errors occurred and, again, am making every effort to ensure that they are not repeated. Thank you for your consideration.

Very truly yours,

IT CORPORATION



Leah J. Webb
Project Manager
Remediation Project Management

enc/

cc: R. O'Neal, Union Carbide
T. Hernon, IT
E. Timmes, NEPCCO/IT
P. Feeney, NEPCCO/IT



May 24, 1988

Mr. Scott Hickes
Union Carbide Corporation
Linde Division
308 Harper Drive
Moorestown, NJ 08057

RE: Mercury Cleanup at the Linden Plant

Dear Scott:

As per your request and our discussions over the past few weeks, I would like to present our estimated costs for additional work at the Linden Plant. These costs were generated using the contract rates and conditions, and Maurice Douglas' crew, equipment, and time to complete estimates. The attached work sheet details the labor and equipment rates used to generate the cost per day for continuing with the same work crew and equipment, with the exception of an additional \$2,500 for 80 ton crane rental to disassemble the two vertical receivers located at the rear of the plant.

The summary of total project costs are as follows:

Invoice # R00352	\$ 81,516
Invoice # 38110003	76,802
Week Ending 5/1 & 5/8	39,438
Extra Work Est.	148,307 - <i>maybe less... worst case number.</i>
Miscellaneous *	<u>36,500</u>
TOTAL	\$382,563

*Miscellaneous costs include the asbestos removal, demobilization, analytical, office time, and expenses.

Mr. Scott Hickes
Union Carbide Corporation
May 24, 1988
Page 2

The only costs not included in the above are for the large receiver storage tank and transportation and disposal of wastes.

Sincerely,

IT CORPORATION



Tom Hernon
Project Manager

TH:mm
#305281
th059-1tr

Attachment

cc: Y. Bashir - Union Carbide
N. DiFronco - Union Carbide
M. Douglas - IT Pittsburgh
L. Webb - IT Edison

DAILY AVERAGE COST

Prepared By	Initials	Date
Approved By		

82404 4 COL. Rite-Across

		1	2	3	4
				w/ 6%	
1	LF092 ST (2) 8 HR @	39 ⁰⁰	624 ⁰⁰	661 ⁴⁴	
2	LF092 OT (2) 2 "	54 ⁶⁰	218 ⁴⁰	231 ⁵⁶	
3	LF087 ST 8 "	30 ⁰⁰	240 ⁰⁰	254 ⁴⁰	
4	LF087 OT 2 "	42 ⁰⁰	84 ⁰⁰	89 ⁰⁴	
5	LF040 ST (2) 8 "	27 ⁰⁰	432	457 ⁹²	
6	LF040 OT (2) 2 "	37 ⁸⁰	151 ²⁰	160 ²⁶	
7	LF346 ST 10 "	75 ⁰⁰	750 ⁰⁰	795 ⁰⁰	
8	LS128 ST 10 "	40	400 ⁰⁰	424 ⁰⁰	
9				3073 ⁵⁶	
10					
11					
12					
13					
14					
15	EQUIPMENT			w/ 15%	
16	SHOWER TRAILER		61 ³⁹	61 ³⁹	
17	OFFICE TRAILER		27 ²⁸	31 ³⁸	
18	PICK-UP TRUCK		57 ⁵⁰	57 ⁵⁰	
19	MECHANICS TRUCK		57 ⁵⁰	57 ⁵⁰	
20	RENTAL CAR (2)		106	130 ⁰⁰	
21	STORAGE TANK (3)		232 ⁵⁵	232 ⁵⁵	
22	MERCURY VAPOR ANALYZER		23 ²⁵	23 ²⁵	
23	MERCURY VACUUM		106 ⁶⁶	106 ⁶⁶	
24	CRANE		116 ²⁷	133 ⁷¹	
25	NOBEL - PRESSURE WASHER		26 ⁹⁷	31 ⁰¹	
26				864 ⁹⁵	
27					
28					
29					
30	INDIRECTS				
31	SWAN MOTEL		327 ⁹⁰	377 ⁰⁸	
32	PER DIEM		245	281 ⁷⁵	
33	AIR FARE - 1984/PER TRIP		92 ²⁷	106 ¹¹	
34				764 ⁹⁴	4703 ⁴⁵
35					
36	UNITED CRANE				
37	NEPCO				
38					
39					
40					

NATIONAL PACKAGED GASES OFFICE
P.O. BOX 6744, 200 COTTONTAIL LANE
SOMERSET, NJ 08875-6744

To T. E. DeBriac
V. A. Smith

Date February 25, 1988

Originating Dept. Environment & Health

Copy to A. A. Galvan

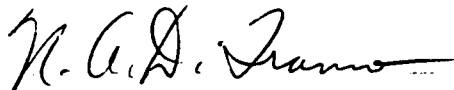
Subject LINDEN CLEANUP

Phase I of the Linden cleanup will begin shortly. Attached is a Scope of Work prepared by Scott Hickes and myself, and reviewed by IT Corporation during an informal meeting held at Somerset on February 24, 1988. This Scope of Work has been sent to Chuck Cook of Tonawanda Purchasing for inclusion in the contractual agreement.

Also attached, is the latest proposal for cleanup work submitted by IT Corporation including a cost estimate and work schedule. The estimated cost for Phase I is \$138,000, of which at least \$35,000 will be charged to Tonawanda Engineering for the cleaning of Compressor #3. Compressor #3 will be shipped to LaPorte, TX to be used in a hydrogen project.

For purposes of Phase I Cleanup, Scott Hickes has been named as the UCC on-site representative. Assistance will be given Scott from Somerset and the Eastern Region, as necessary.

Please let me know if you have any questions.



N. A. DiFranco

NAD:jl
(1068)

/Attachments

LINDEN

I. Scope of Work

Scope of work consists of the following:

- A. Dismantlement and cleaning of 3 compressors.
- B. Dismantlement and disposal of process piping and equipment.
- C. Cleaning of walls, ceilings, floors and roof of the Production building.
- D. Disposal of cleaning solution, asbestos and mercury contaminated piping and equipment.

II. Work Done by Others

- A. Supervision for the dismantlement of the compressors will be provided by Union Carbide.
- B. Reassembly of the compressor will be the responsibility of Union Carbide.
- C. Process Piping and equipment will be blowdown and purged with inert gas and physically isolated from all product sources, by Union Carbide to the satisfaction of IT's Health and Safety Requirements.
- D. Power to all electrical equipment will be disconnected and locked out by Union Carbide.

III. Work Done by the Contractor

- A. The Contractor shall provide all equipment manpower tools, material and supervision necessary to perform the required work.
- B. Compressor Dismantlement and Cleaning
 - 1. Containment cells will be constructed around each compressor. Disassembly and cleaning will be performed within these cells.
 - 2. Each compressor component shall be vacuumed using a mercury vacuum unit.

3. Areas not used as a sealing surface or regarded as a critical area will be cleaned using "HgX" cleaning agent. Sealing surfaces and critical areas shall be identified by UCC representative for protection from corrosive agents.

4. After cleaning, representative wipe sample shall be taken and analyzed to determine the effectiveness of cleaning. If mercury is detected in the wipe test, the cleaning procedure shall be repeated once. No further wipe test will be taken. The quantity and location of wipe samples will be mutually agreed upon by IT and Union Carbide.

5. Dismantlement and cleaning shall begin with Compressor #3 then #2 and #1.

C. Dismantlement of Process Piping & Equipment

1. Process piping and equipment to be dismantled will be identified by tagging by Union Carbide representative.
2. Pipes will be cut with portable power saws or manual pipe cutters. Procedures for cutting pipes shall be mutually agreed upon between IT and Union Carbide.
3. Pipe cutting shall be conducted in such a manner to prevent the uncontrolled release of mercury. Portable catch basins shall be used to collect any mercury that is trapped within the system.
4. Each end of pipe shall be securely capped and sealed to avoid spreading of contamination during handling. Blind flanges or other appropriate seals will be installed on open ends of remaining process equipment and pipes.
5. Vacuum pump and driers inside the plant will be disconnected from the system disassembled and disposed. Catch basins shall be used to collect any mercury that is trapped within the system. No mercury cleaning other than external vacuuming will be performed.
6. Contaminated pipes, vacuum pumps and driers will be securely staged on-site within lined roll-off containers.

D. Dismantlement of Steam Pipe

1. IT will remove only the asbestos insulated abandoned steam lines located inside the building. The pipes will be cut in sections for ease of handling, wrapped in 3 layers of 6 mil polyethylene sheeting. The ends will be sealed and the pipes appropriately labelled prior to placement in a roll-off container. The asbestos containing material (ACM) will not be removed from the piping. Where cuts are required and the pipe is not exposed, the glove bag technique will be used to remove the ACM and expose pipes for cutting.
2. Union Carbide employees will not be on property during or after asbestos removal until area is certified "asbestos free" by IT's Health and Safety Personnel.
3. Asbestos removal shall be conducted in accordance with 40CFR 61.145, National Emission Standard for Asbestos. IT shall be responsible for notifications to the EPA Administrator and NJ DEP as required by 40CFR 61.146, and any other state regulation.
4. Disposal of asbestos containing material shall be conducted in accordance with 40CFR 61.152, Standard for Waste Disposal.
5. During handling of asbestos containing material (ACM), IT will conduct industrial hygiene monitoring in accordance with 29CFR 1926.58. Upon completion of removal of ACM, IT will assure Union Carbide that asbestos is not present in the building above the action level of 0.1 fiber/cc set by OSHA.
6. IT will provide UCC with copies of all industrial hygiene monitoring and area monitoring results.
7. IT will provide UCC with copies of all correspondence with the EPA and State Agency relating to the removal and disposal of asbestos containing material.

E. Cleaning of Walls, Ceilings, Floors and Roof

1. Upon removal of process equipment and piping, asbestos pipe and after cleaning of the compressors, the entire building will be internally vacuumed using a mercury vacuum unit.
2. The entire roof will be vacuumed using a mercury vacuum unit.

F. Disposal

1. Rinsate from compressor cleaning will be staged in 55 gallon drums. Disposal of any rinsate is contingent on waste characterization by IT. Union Carbide and IT will agree at a later date on disposal alternatives taking into consideration: land disposal restriction and treatment methods.
2. Solid wastes shall be disposed of at a site agreeable to Union Carbide and IT.

IV. Safety and Special Conditions

- A. Work shall be done in accordance with the safety rules of the Associated General Contractors of America and the Linde Safety, Health & Environmental Rules for Contractors (L-11-454F, dated April, 1987).
- B. The use of cutting torches inside the building is prohibited. The use of power tools whether inside or outside the building shall be allowed, provided that a Linde Hazardous Work Permit is issued and in effect.
- C. The Contractor shall be responsible for protection from physical damage of other buildings and equipment in close proximity to the demolition site.
- D. Any free mercury collected during the dismantlement, removal and cleaning of the compressors, piping and process equipment, shall remain the property of Union Carbide.

NADiFranco
(1067)



February 12, 1988

Mr. Don Mueller
Office S1217
Union Carbide Corporation
39 Old Ridgebury Road
Danbury, CT 06817-0001

RE: Union Carbide Corporation - Linde Division
Linden Plant

Dear Mr. Mueller:

In accordance with the most recent discussions between IT Corporation (IT) and Union Carbide Corporation (UCC) held at IT offices on February 8 and the revised scope of work presented to IT by UCC on February 9, IT is pleased to present this proposal for clean up work inside the Linden plant on a time and materials basis. Attached is a comprehensive breakdown of IT's category rates and equipment charges that will apply to this project. Please note that these rates are discounted from our standard commercial category rates as illustrated in the attachment. IT intends to execute this work in the most cost effective manner that is consistent with safeguarding the health and safety of IT's and UCC's employees and property while complying with all local, state and federal regulations that pertain to the handling and disposal of the regulated materials that will be present. Reference is made to our proposal number C05281 from November of 1987 regarding our detailed health and safety plan to which we intend to adhere. The procedures and techniques described in the above proposal for dismantling, removal and cleaning will be followed for this project with the understanding that some revisions can be expected as actual field conditions dictate.

The sequence of activities and scope of work will be in accordance with your letter of February 9, 1988, particularly, priority will be given to number three compressor to facilitate its scheduled shipment to Texas.

Attached is a revised cost estimate to perform the work activities for this phase of the project. As you are aware, there are a number of undefined costs associated with this project such as: Standard of Cleanliness, Transportation and Disposal, and Analytical. IT's approach to defining these unknown costs is as follows:

- Standard of Cleanliness

It is assumed that upon disassembly and thorough cleaning that analytical wipe sample results will show "Non Detectable" levels of Mercury thereby indicating no action levels need be established. If levels of Mercury are detected, recleaning and resampling with subsequent cost increases might be required.

Regional Office

165 Fieldcrest Avenue • P.O. Box 7809 • Edison, New Jersey 08818-7809 • 201-225-2000

Mr. Don Mueller
Union Carbide Corporation
February 12, 1988
Page 2

- Transportation and Disposal

These costs are totally dependent upon quantity of materials (wash solution, rinseate, etc.) and contamination level, and therefore are best left for competitive pricing based upon actual conditions and quantities at project completion.

- Analytical

Analytical results from sampling as the job progresses will indicate whether the number of samples taken must increase or can decrease. While the analytical costs themselves are not significant with regard to total project cost, they will dictate whether additional cleaning is required.

IT feels that this approach to the cleanup activities at the Linden plant is in the best interests for both Union Carbide and IT and we look forward to a successful execution of this project.

Sincerely,

IT CORPORATION



Harold W. Moores
Manager, Edison Regional Office
Remediation Project Management



Thomas Hernon
Project Manager
Remediation Project Management

HWM:TH/dc
#C05281
hm306-1tr

cc: Mr. F. Cook - Tonawanda
Mr. N. A. DiFranco - Somerset
Mr. A. A. Salvan - Moorestown
Mr. J. S. Siepeirski - Tonawanda

UNION CARBIDE CORPORATION
LINDEN PLANTCOST ESTIMATECost Estimate for Work Requested 2/9/88

Mobilization and Site Preparation	\$ 10,000.00
Inside Product Line Removal (Mercury Contaminated)	\$ 12,200.00
Inside Steam Line Removal (Asbestos Insulated)	\$ 11,000.00
Clean Compressor #3	\$ 35,000.00
Clean Compressor #1 & #2	\$ 40,000.00
Vacuum Pump & Drier Removal	\$ 8,000.00
Vacuum Plant & Roof	\$ 7,000.00
Demobilization	\$ 7,000.00

Sampling & Analysis:

Labor	(40 hrs. @ \$ 65/hr.)	\$ 2,600.00
Compressor #1	(7 @ \$150/hr.)	\$ 1,050.00
Compressor #2	(7 @ \$150/hr.)	\$ 1,050.00
Compressor #3	(7 @ \$150/hr.)	\$ 1,050.00
Building Walls and Ceilings	(10 @ \$ 50/hr.)	\$ 500.00
Building Floors	(6 @ \$150/hr.)	\$ 900.00
	(2 @ \$ 50/hr.)	\$ 100.00
Field Blanks	(8 @ \$ 50/hr.)	\$ 400.00

Subtotal \$137,850.00

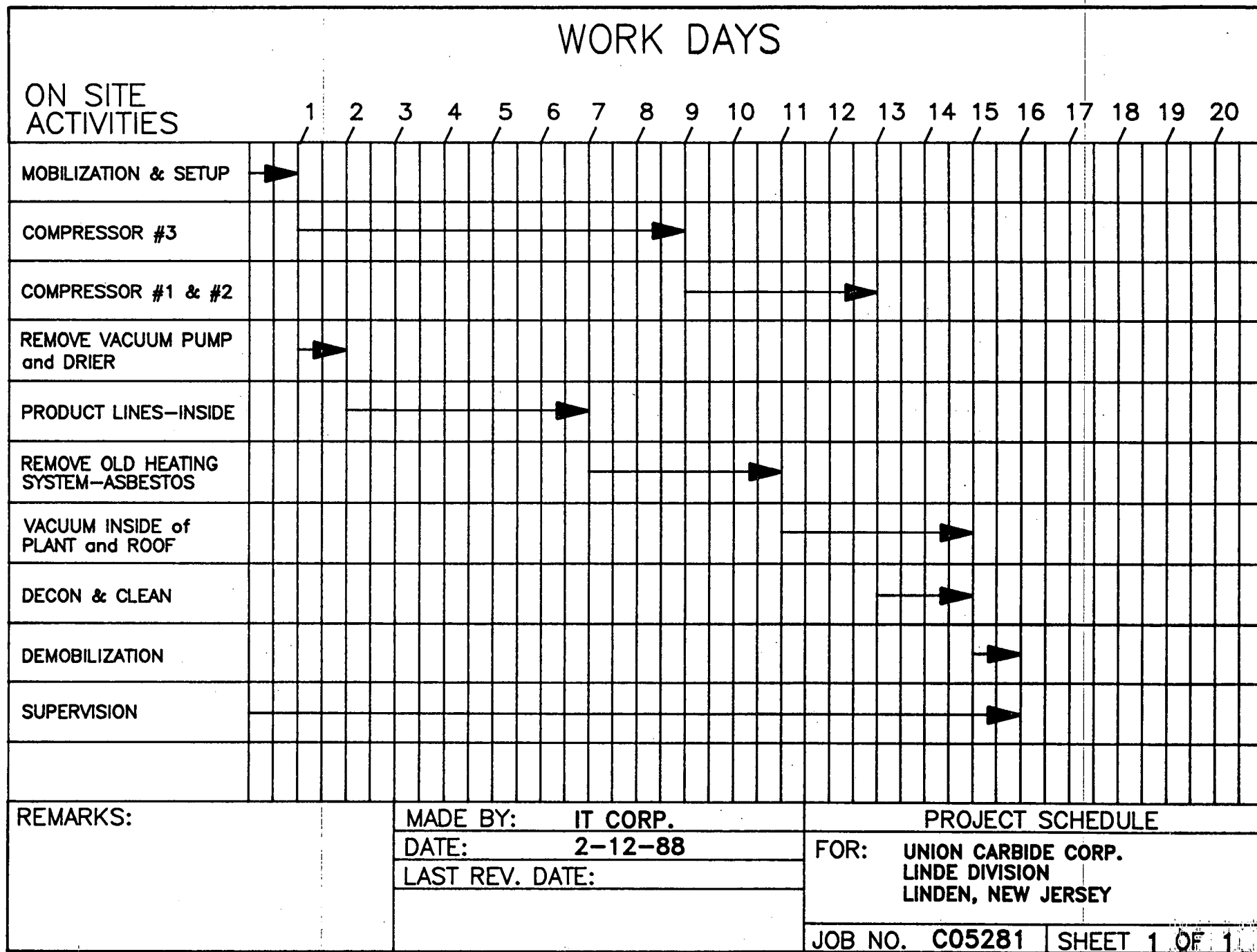


Figure 5-1

**CATEGORY LABOR RATE TABLE
UNION CARBIDE CORPORATION
FEBRUARY 12, 1988**

Page 1 of 2

CATEGORY TITLES			IT 1987 COMMERCIAL CATEGORY RATES (\$/HR)	UCC RATES (\$/HR)
ANALYTICAL	ENGINEERING	REMEDIATION/ OPERATIONS (EMERGENCY RESPONSE)		
Clerk Typist	Clerk Typist	Technician I	27	27
Technical Support I	Technical Support I	Technician II Operator	32	30
Field Assistant Draftsperson Technician			35	35
Technical Support II	Technical Support II	Technician III	37	36
Senior Technician	Senior Technician Senior Draftsperson	Senior Operator	39	39
	Engineer Scientist	Purchasing Agent	42	40
	Asst. Project Engineer I Asst. Project Scientist I		48	48
Analytical or Data Management Technician			50	50
		Assistant Project Estimator Operations Supervisor Field Chemist Construction Engineer I	55	53
	Asst. Project Engineer II Asst. Project Scientist II	Senior Operations Supervisor Project Estimator Construction Engineer II	57	50
	Project Engineer I Project Scientist I		64	63

**CATEGORY LABOR RATE TABLE
UNION CARBIDE CORPORATION
FEBRUARY 12, 1988**

Page 2 of 2

CATEGORY TITLES		REMEDATION/ OPERATIONS (EMERGENCY RESPONSE)	IT 1987 COMMERCIAL CATEGORY RATES (\$/HR)	UCC RATES (\$/HR)
ANALYTICAL	ENGINEERING			
Chemist Field Sampling Specialist Data Management Specialist			65	65
	Project Engineer II Project Scientist II		70	67
Senior Chemist Senior Field Sampling Spec Senior Data Management Spec QA/QC Specialist	Health & Safety Specialist	Superintendent	75	75
	Senior Project Engineer Senior Project Scientist Health & Safety Coord		77	77
Project Manager Project Consultant Toxicologist	Project Manager Staff Consultant Senior Health & Safety Specialist	Project Manager	90	90
Environmental Affairs Spec	Site Manager Health & Safety Regional Manager			
Senior Technical Consultant QA/QC Director	Project Director Program Director Senior Staff Consultant		115	110
Legal Senior Management Sr Environmental Affairs Mgr	Legal Principals		150	135

**TERMS AND CONDITIONS
UNION CARBIDE CORPORATION**

1.0 Personnel Charges

- 1.1 Project technical and management personnel time will be invoiced according to the Category Rate Schedule.
- 1.2 Personnel time charges are also invoiced for direct project support activities such as report typing and reproduction. Indirect support staff time such as office administration is not charged.
- 1.3 All time is rounded to the nearest one-half hour.

2.0 Premium Personnel Charges

- 2.1 The Category Rate Schedule applies for all hours worked by Exempt (salaried) Personnel.
- 2.2 The Category Rate Schedule applies to the first eight (8) hours worked by Non-Exempt (hourly) Personnel between 0700 hours and 1700 hours, Monday through Friday.
 - 2.2.1 Overtime is charged at 1.5 times the Category Rate for all hours worked by Non-Exempt Personnel:
 - Exceeding eight (8) hours per day; or
 - Exceeding forty (40) hours per week; or
 - Between 1700 hours one day and 0700 hours the next day; or
 - on Saturday.
 - 2.2.2 Premium Time is charged at 1.7 times the Category Rate for all hours worked by Non-Exempt Personnel on Saturdays and holidays (10 holidays per year defined annually by IT policy).
- 2.3 Emergency Response Premium - All Emergency Response is charged at 1.3 times the applicable rate (with or without Level A personal protection equipment).
- 2.4 Expert testimony, including preparation and standby, is charged at 2.0 times the applicable Category Rate, Overtime Rate or Premium Time Rate.

3.0 Travel and Living Expenses

- 3.1 Living expenses are charged as follows:
 - 3.1.1 Non-Exempt Personnel - Per diem charge of \$30 per day and lodging at cost plus 15%.
 - 3.1.2 Exempt Personnel - Actual costs plus 15%.

3.2 Travel expenses are charged at cost plus 15%.

3.3 Personnel time charges for travel within the continental United States are invoiced at the Category Rate to a maximum of eight (8) hours each way.

4.0 Other Charges

4.1 Microcomputer and text processing equipment is invoiced at \$15.00 per connect hour, rounded to the nearest half-hour.

4.2 Charges for equipment will be invoiced in accordance with IT's published Equipment Rate Schedule.

4.3 A miscellaneous charge equal to 3% of personnel time charges will be invoiced to cover telephone, copying, postage, etc.

4.4 Special services such as computer, reprographics, drilling, analytical laboratory and remediation are available and pricing will be provided upon request.

4.5 Third party equipment rentals and temporary personnel located at IT's facilities or under IT's control will be invoiced according to IT's Equipment Rate and Category Rate Schedules.

5.0 Reimbursable Expenses

All project related purchases will be invoiced at cost plus 15% including materials, subcontractor costs, fees, duties, deposits, broker's fees, equipment purchase and other costs incurred specifically for the project.

6.0 Invoicing and Terms of Payment

6.1 Payment terms for professional services are NET 30 DAYS.

6.2 A service charge equal to 1.5% per month or the maximum lawful rate, whichever is lesser, will be charged on all account balances past due.

6.3 Invoices may be submitted as frequently as monthly; however, on any project where total billings are expected to exceed \$1,000,000 or monthly billings may be made as frequently as weekly.

**EQUIPMENT RATE SCHEDULE
UNION CARBIDE CORPORATION - LINDE DIVISION**

Rates do not include Equipment Operators.

Rates include fuel, tolls, and mileage, portal to portal.

One-day minimum charge (except where noted).

Daily rates include up to 24 hours in one calendar day. Includes standby rates.

<u>VEHICLES</u>	<u>RATE PER 1/2 DAY*</u>	<u>RATE PER DAY**</u>
Vacuum Tanker (2500 gal.-5000 gal.)	\$265	\$530
Tandem Diesel Rack, Dumper (up to 12 yd.), Hazmat Van	190	380
Rack, Dumper (up to 7 yd.)	150	300
Utility (pickups, vans, wagons), Storage Tanker	65	130

* Maximum 4 hours/calendar day

**Maximum 24 hours/calendar day

<u>SUB-SURFACE EXPLORATORY EQUIPMENT</u>	<u>RATE PER DAY</u>
Drill Rig - Auger for observation well installation	\$ 550
Drill Rig - Bucked auger for recovery wells	1,300
Drill Rig - Air Rotary	2,000
Drill Rig - Porta-Sampler	300
Supply Truck	300
Groundwater Flowmeter	150
Sonic Interface Tester	45
Underground Metal Detector	75
Surveying Equipment (transit, etc.)	75

<u>EXCAVATION EQUIPMENT</u>	<u>RATE PER DAY</u>
Back Hoe Loaders: 3/4 yd. bucket	\$ 450
Track Hoe	850

EQUIPMENT RATE SCHEDULE
UNION CARBIDE CORPORATION - LINDE DIVISION

<u>OTHER EQUIPMENT</u>	<u>RATE PER DAY</u>
Power Washers up to 2,000 psi (including fuel)	\$ 175
up to 5,000 psi (including fuel)	350
up to 10,000 psi (including fuel)	600
Air Compressor 185 cfm, Diesel or Gas	225
Pumps - 2" & under pneumatic, electric or engine driven	85
2" & under specials	140
3" pneumatic, electric or engine driven	140
3" specials (and all P.C.B. pumps)	225
4" pneumatic, electric or engine driven	225
4" specials	400
6" pneumatic, electric or engine driven	400
HAZMAT Vacuum Systems (special absolute filter units)	400
Ventilating Fans (explosion-proof)	75
Copus Blower System with Compressor	210
Power Utility Boats (to 15')	150
Power Utility Boats (to 20')	200
Containment Boom (Harbor and River)	1/ft.
Containment Boom Decontamination (one-time charge)	3/ft.
Weir type Skimmers (used on vacuum trucks)	110
Floating Oil/Water Separator	60
Water Table Depression Pump 3/4 hp (85 gpm)	60
Water Table Depression Pump 2 hp (125 gpm)	80
Double Pump Recovery System	115
Generators - to 5 kw	140
Generators - to 10 kw	250
Breathing Air (per cylinder)	50
30 Minute SCBA	75
5 Minute SCBA	25

OTHER EQUIPMENT**RATE PER DAY****Hazard Categorization Kit****~~50~~****Tri Tector with 30' Probe****~~75~~****Photo Ionization Detector****90****Explosion Meter****25****Flame Ionization Detector****175****Mercury Vapor Analyzer****125****Abrasive Cut-off Saw (includes 1 blade)****75****Draeger Gas Detector (not including tubes)****60****Mobile Phone (when required)****50****Solids Core Sampler****50**

EQUIPMENT RATE SCHEDULE
UNION CARBIDE CORPORATION - LINDE DIVISION

ANALYTICAL EQUIPMENT

TLV Sniffer	\$ 75.00/day
Radiation Meter	\$ 75.00/day

DRUM HANDLING EQUIPMENT

Drum Crusher	\$500.00/day
Grappler, Hydraulic 360 Degree	\$520.00/day

A surcharge of four percent of labor charges will be added to cover the following small tools and consumables. (A Material Rate Sheet will be provided upon request.)

SURCHARGE MATERIAL LIST

Bags	Hard Hat Liners
Body Shampoo	Labels/Stickers
Cardboard Boxes	Lanterns
Cans	Lantern Batteries
Ear Plugs	Pallets
Faceshields	pH Paper
Faceshield Bracket	Potassium Iodide Pater
Flashlight	Plastic Drum Pump
Flashlight Batteries	Waders
Gator-Aide	Water
Work Gloves	Rags
Goggles	Rope
Hand Cleaner	Disposable Respirators
Hard Hats	Tape
Hard Hat Chin Straps	Labels/Stickers

SURCHARGE SMALL TOOL CONSUMABLES

Small Hand Tools	Folding Ladder
Barricade w/Lights	Gasoline Soil Tamper
Chain Saw	Hand Truck
Chainfall	Pallet Jack
Cones, Highway	Partner Saw
Cutting torch	Portable Eyewash/Shower
Drive Impact Wrench	Sandblast Pot
Drum Dolly	Tule Cutter
Electric Hoist	Hand Auger
Extension Cords	Wheelbarrow
Extension Ladder	Hudson Sprayer
Hazard Catergorization Kit	Portable Radios/Base Station



February 8, 1988

Mr. Don Mueller
Office C1217
Union Carbide Corporation
39 Old Ridgebury Road
Danbury, Connecticut 06817-0001

RE: Revised Letter Proposal for Cleaning of Compressors, Linde Division,
Linden, NJ - IT Corporation Proposal No. C05281

Dear Mr. Mueller:

IT Corporation (IT) is pleased to submit this proposal for cleaning either one or three compressors at Union Carbide Corporation, Linde Division's Linden, New Jersey Plant.

IT proposes to wipe down all external surfaces of the compressors using a solvent bath to remove all grease buildup and permit inspection of all exposed parts. Containment cells will be constructed of lumber and polyethylene sheeting to enclose each compressor. Compressor disassembling and component cleaning will be performed within these cells to confine any mercury beads. The compressors will be disassembled under the direction of L. Kune from Kune Welding. IT will require Union Carbide to make Mr. Kune available for the duration of this task. After the compressor exteriors have been cleaned, each component of the compressors shall be vacuumed using a mercury vacuum unit. Areas (on the two compressors that are to be salvaged) which are not used as a sealing surface will be cleaned using "HgX" cleaning agent. The agent can be applied as a powder or liquid and will aid in mercury cleaning. HgX is a mild corrosive and is not recommended for machined surfaces with close tolerances.

A small section of paint will be removed from each of the two compressors that are to be salvaged and a wipe sample will be taken to determine if mercury contamination has penetrated the paint. If analysis reveals that mercury has penetrated the paint, the IT project superintendent and the on site Union Carbide representative will determine whether paint removal and additional decontamination efforts will be more cost effective than disposal and replacement of the compressors.

Additional decontamination efforts will consist of breaking down the remainder of each compressor to be salvaged, disposing of all worn parts, degreasing all surfaces, and mercury vacuuming all parts. If further decontamination is required, the compressor parts will be introduced to a series of baths. The first bath will be a nitric acid solution to dissolve the mercury. This will be followed by an alkaline bath to neutralize the nitric solution and to prevent rusting. The final bath will be hot water to remove the alkaline

Regional Office

165 Fieldcrest Avenue • P.O. Box 7809 • Edison, New Jersey 08818-7809 • 201-225-2000

rinse. Wipe samples will be taken and analyzed as outlined in the attached "Sampling and Analysis Procedures" to verify level of clean. Quantity of samples and level of clean will be determined in the field and mutually agreed upon by both IT and Union Carbide. Parts which are certified to be clean will be wrapped in polyethylene sheeting and stored in a holding area. Certain parts may require additional attention, such as lubrication, following certification. The compressors shall be reassembled and/or palletized by Kune Welding.

The small compressor will be sampled and analyzed for disposal parameters, then loaded into a rolloff container for disposal upon completion of the cleaning. Disposal of the one small compressor will entail completing waste characterization forms for an approved facility and arranging transportation to that facility. Depending on the final level of mercury contamination, either of two facilities will be chosen (listed below).

DISPOSAL FACILITIES: 1. Envirosafe Services of Ohio, Inc.
876 Otter Creek Road
P.O. Box 167571
Oregon, Ohio 43616-7571
EPA ID #: OHDO45243706

2. Mercury Refining Company, Inc.
Railroad Avenue
Albany, New York 12205
EPA ID #: NYD048148175

CLEAN COMPRESSOR
+ SCRAP

TRANSPORTER:

American Industrial Marine Services
1630 South 2nd Street
Plainfield, New Jersey 07060
EPA ID #: NJD981873664

The revised costs for performing this work are as follows:

1. Small Compressor, Disassembly and Single Pass Washing - Lump sum price of \$ ____.
2. Clean Three Compressors, Disassembly and Single Pass Washing - Lump sum price of \$ ____.
3. Transportation - Transportation to Envirosafe Services of Ohio, Inc. shall cost \$ ____ per load. Transportation to Mercury Refining Company, Inc. shall cost approximately \$ ____ per load. Spotting rolloff containers shall cost \$ ____ per container. Rental for the rolloff containers shall cost \$ ____ per day or \$ ____ per month.
4. Disposal - Disposal costs shall depend upon final analytical results.

Included with this letter proposal are: (1) IT Sampling and Analysis Procedures and (2) IT Health and Safety Plan. Please call me or Leah Webb if you have any questions or concerns. Thank you.

Very truly yours,

IT Corporation

Harold W. Moores
Manager, Edison Regional Office
Remediation Project Management

Leah J. Webb
Project Manager
Remediation Project Management

cc: Maurice Douglas, IT Corporation
Nick DiFranco, Union Carbide Corporation
David Schmiede, Union Carbide Corporation
Chuck Cook, Union Carbide Corporation
Fred Galvin, Union Carbide Corporation
Jim Siepierski, Union Carbide Corporation

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SAMPLING AND ANALYSIS PROCEDURES

1.0 PROCEDURE FOR WIPE SAMPLING

The wet wipe sampling procedure employs the use of a sorbent cotton gauze pad which is dampened with a 10% nitric acid solution. A standard, decontaminated 0.25 m² template is used to delineate the correct amount of area to be wiped, or, if the template is not applicable, an area is measured off the mark.

A new pair of surgical gloves is used for taking each sample. The wet gauze pad is wiped, with straight and even strokes, from one side of the template to the opposite side, moving in one direction only. Each successive sweep slightly overlaps the previous sweep. When finished in one direction, the template area is wiped again in the perpendicular direction in exactly the same manner. As each wipe is used, it placed in a prelabeled 250 mL sample container. The conditions surrounding each sample taken are carefully and thoroughly documented. As part of the sampling procedures, field blanks are collected to determine if specific analytical interferences are introduced by the gauze pads or nitric acid solution.

2.0 DOCUMENTATION

Detailed sample documentation is maintained by the sampling personnel. The primary segment is the field notebook which will contain the following site and sampling procedure information:

- . Exact sample location
- . Quantity and volume of sample containers
- . Date and time of sampling
- . Type of sample
- . Depth of sample
- . A sketch of the sample location
- . Sample identification numbers
- . A description of the weather
- . The collector's initials

Any conditions pertaining to the sample and location are also detailed.

Photographic documentation of each sample is used to support the written documentation. The following information about each photograph will be kept in the field notebook:

- . Date, time, location, and sequential number in roll of each photograph
- . Directional information
- . Name of the photographer

The person responsible for the samples will fill out a Request For Analysis form designating the requested analytical parameters for each sample. This form also specifies site or case name, date and time of collection, exact sampling location, name of collector, method of preservation and name of person responsible for samples.

The legal record of possession (sample accountability) is established by the Chain of Custody Record. This chain of custody form identifies IT as the entity performing the sampling, lists each sample number and total number of containers per sample, gives a description of each sample, specifies the date and time of the relinquishment of the samples, and is signed by the person who assumes responsibility of the samples.

3.0 QUALITY ASSURANCE/QUALITY CONTROL

The objective of the Quality Assurance/Quality Control (QA/QC) plan is to provide a mechanism for the control and evaluation of data quality throughout the course of the project. The quality control data will be used to define the precision and accuracy for measured contamination values. In order to evaluate the sample container preparation procedures, and any potential contamination, a trip blank will be taken for each day of sampling. Each trip blank will consist of a set of sample containers filled with laboratory demonstrated analyte-free water. In addition to the trip blanks, field blanks will also be taken in order to evaluate possible cross-contamination from improper decontamination of sampling equipment.

IT's QA/QC procedures are on file with the NJDEP and include details of sample handling and processing procedures, including preservation of samples, holding period, and reference test methods. All analysis will be performed by IT's state certified laboratory in Edison, New Jersey, according to accepted NJDEP methodologies for evaluating environmental samples for ECRA.

4.0 WIPE SAMPLE ANALYSIS

The number and location of the wipe samples to document the level of clean in the plant will be determined by Union Carbide and IT. The wipe samples will be analyzed for mercury content and, again, a 24 hour turnaround time is available. This expedited analysis may be necessary in the event further cleaning is deemed appropriate given the analytical results.

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**PROPOSAL
REMOVAL OF MERCURY AND ASBESTOS
CONTAMINATED PIPING AND PLANT CLEANING
UNION CARBIDE CORPORATION
LINDE AIR PRODUCTS DIVISION
LINDEN, NEW JERSEY**

PREPARED BY:

**IT CORPORATION
165 FIELDCREST AVENUE
EDISON, NJ 08818**

#C05281

NOVEMBER 1987

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1.0 INTRODUCTION

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1.0 INTRODUCTION

Union Carbide Corporation has requested IT Corporation (IT) to submit a proposal for specific cleanup activities at their hydrogen filling facility in Linden, New Jersey.

Services to be provided consist of:

1. Removal of mercury contaminated product piping
2. Removal of piping insulated with asbestos
3. Cleaning of compressors
4. Removal of vacuum pump and drier
5. Vacuuming of floors, walls and ceilings of plant building
6. Sampling and analytical of compressors and plant building
7. Transportation and disposal of contaminated materials

A site tour was conducted by Mr. Y. Boshir of Union Carbide on September 28, 1987 to review the areas of work. Supplemental services, as requested by Mr. D. Renner, are:

- A. Mercury contaminated roofing material removal and disposal
- B. Define the extent of mercury contamination in the drum storage pad area

This proposal is organized as follows:

- Section 2.0 Scope of Work for Execution of Initial Bid
- Section 3.0 Scope for Supplemental Work
- Section 4.0 Sampling and Analysis Procedures
- Section 5.0 Health and Safety Plan
- Section 6.0 Cost Proposal
- Appendix A Agreement Addendum for Asbestos Abatement

2.0 SCOPE OF WORK FOR EXECUTION OF INITIAL BID

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2.0 SCOPE OF WORK FOR EXECUTION OF INITIAL BID

2.1 INTRODUCTION

IT will provide labor, equipment and material necessary to remove piping and equipment from the existing hydrogen filling system and obsolete asbestos-insulated steam pipes. Upon completion of the removal of contaminated debris, the plant shall be internally vacuumed. All waste will be collected, transported and disposed of at an appropriate disposal facility.

Resources

Labor: Equipment Operator - 2
Operation Technician - 6
Decontamination Technician - 1

Equipment: Transport Vehicles
Truck Mounted Crane
Fork Truck - 6000lb capacity
Office Trailer
Personnel and Equipment Decontamination Trailer
Compressor & Associated Pneumatic Tools
Portable Power Saws
Torch and Welder

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Activities

- D
- Mobilization and Site Preparation
 - Product Line Removal (Mercury contaminated)
 - Steam Pipe Removal (Asbestos Insulated)
 - Cleaning of Compressors
 - Vacuum Pump and Drier Removal
 - Vacuum floors, walls and ceilings of plant building
 - Sampling and Analysis
 - Transportation and Disposal
 - Demobilization

2.2 MOBILIZATION

Mobilization and site preparation will consist of transporting men, equipment and materials to the site, and blocking and leveling trailers (i.e., office trailer, decontamination trailer, etc.). During mobilization, the crew will be informed of Union Carbide's Health and Safety requirements and be familiarized with the plant.

2.3 PRODUCT LINE REMOVAL

Upon completion of mobilization, product line (pipe) removal will commence. Prior to cutting the product line, several safety precautions must be taken and performed by Union Carbide. The system must be blowdown, purged with an inert gas (i.e. nitrogen, helium, etc.) then evacuated, pressurized slightly above atmospheric pressure with an inert gas, then physically isolated from all product sources. Each line must satisfy IT's Health and Safety requirements for 0.0% flammability, verified using a LEL (lower explosive limit) meter.

The pipes will be cut with portable power saws into lengths that are easily handled. Because of space limitations and required clearances, wheel-type pipe cutting tools are not practical, therefore, portable band saws, reciprocating saws or like equipment are proposed for pipe demolition. If an alternate method of cutting is required (i.e. power shears, wheel-type cutting, etc.) the revised procedures will be mutually agreed upon by both IT and Union Carbide. Cutting shall be performed in such a way as to minimize heat to avoid vaporization of mercury. A portable catch basin will be placed under each cut location prior to penetrating the pipe. The basin will collect any residual mercury beads that are trapped within the system. After a section of pipe has been removed, an open end will be tipped into the basin and the pipe tapped to allow any remaining beads to roll out. Each end of the pipe will then be securely capped and sealed to avoid the spreading of contamination during handling. The contaminated pipes will be securely staged onsite within lined rolloff containers. Blind flanges will be installed on the suction line at the pipe bridge, gas holder, expansion tank, and driers located behind the plant.

2.4 STEAM PIPE REMOVAL (ASBESTOS INSULATED)

IT will remove the asbestos-insulated abandoned steam lines, including the lines routed along the rear fence of the plant property and the heating system piping inside the plant. The pipes will be cut into sections for ease of handling, wrapped with three layers of 6 mil. polyethylene (poly) sheeting, the ends will be sealed and the pipe appropriately labelled prior to placement in a rolloff container for disposal. The asbestos containing material (ACM) will not be removed from the piping. Where cuts are required and the pipe is not exposed, the "glove bag" technique will be used to remove the ACM and expose the pipes for cutting. In this procedure, any asbestos disturbed during the cutting procedure is trapped within the "glove bag". Personnel and ambient air monitoring will be performed and documented as outlined in Section 5. IT is licensed under the Control and Licensing Act to perform asbestos abatement.

It is assumed that Union Carbide will not permit its employees to utilize the plant building during or after the asbestos abatement until the area is certified by IT's Health and Safety personnel.

2.5 CLEANING OF COMPRESSORS

Containment cells will be constructed of lumber and poly sheeting enclosing each compressor. Compressor disassembling and component cleaning will be performed within these cells to confine any mercury beads. The compressor will be disassembled under the direction of L. Kune from Kune Welding. (It is assumed that Union Carbide will make Mr. Kune available for the duration of this task.) Each component of the compressor shall be vacuummed using a mercury vacuum unit. Areas (on the two compressors that are to be salvaged) which are not used as a sealing surface will be cleaned using "HgX" cleaning agent. The agent can be applied as a powder or a liquid and will aid in mercury cleaning. HgX is a mild corrosive and is not recommended for machined surfaces with close tolerances. ~~Upon completion of the cleaning, the small~~ compressor will be loaded into a roll-off container for disposal. The remaining two compressors shall be reassembled and/or palletized by Kune Welding. Prior to reassembly or palletizing, wipe samples will be taken and

analyzed as outlined in Section 4 to verify level of clean. Quantity of samples and level of clean will be determined in the field and mutually agreed upon by both IT and Union Carbide.

2.6 VACUUM PUMP AND DRIER REMOVAL

The vacuum pump and driers located inside the plant will be disconnected from the system, disassembled and disposed. No mercury cleaning other than an external vacuum will be performed. The thirty (30) high pressure receivers will be disconnected from the manifold, their ends plugged by using pipe plugs and loaded onto a flatbed truck for transportation and disposal.

2.7 VACUUM FLOORS, WALLS AND CEILINGS

Upon removal of the old product lines and asbestos pipe, the entire building will be internally vacuumed using a mercury vacuum unit. Wipe samples will be taken and analyzed to verify the level of clean as outlined in Section 4. The quantity of samples and level of clean will be determined in the field and mutually agreed upon by both IT and Union Carbide.

2.8 TRANSPORTATION AND DISPOSAL

Transportation and disposal (T&D) is based upon estimated weights and volumes and is included for budgetary purposes only. T&D will be billed to Union Carbide according to the manifest and weigh tickets from the disposal facility at cost plus 20%. T&D is based upon the assumption that no special preparation to the disposal debris except normal handling and staging within the work area (included in the cost estimate) is required for acceptance at the disposal facility except as previously outlined. Any rinsate or cleaning solution generated from compressor cleaning will be staged onsite in 55 gallon drums pending analysis and acceptance at a disposal facility. Contaminated personnel protective gear will be bagged at the end of each day, sealed and disposed along with the contaminated debris.

The cost for disposal of the rinsate cannot be accurately estimated until the level of mercury, corrositivity, etc. is determined.

3.0 SUPPLEMENTAL WORK

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3.0 SUPPLEMENTAL WORK

3.1 ROOFING MATERIAL REMOVAL AND DISPOSAL

The roofing system is of an asphalt, built-up type, six inches (6") thick with a weight of approximately seventy pounds (70 lb) per square yard. The area of coverage is one hundred forty-two feet (142') x sixty-two feet (62') [eight thousand eight hundred and four square feet (8,804')]. The roofing debris shall then be transported and disposed at an appropriate disposal facility.

Based upon these assumptions, the covering (asphalt) will be cut using a razor knife into sections approximately four feet (4') x ten feet (10'). Each section will be lifted from its foundation and loaded into a poly-lined rolloff container. Upon completion of roofing removal, the metal flashing around vent pipes protruding through the roof and along the top of the walls will be removed and loaded into rolloff containers.

3.2 EXTENT OF CONTAMINATION - PAD AREA

In an effort to define the extent of mercury contamination at the pad area, ten (10) sample locations will be selected around the pad.

Ten (10) borings, one (1) foot in depth, will be drilled. Each borehole will be sampled twice, once at the 0" - 6" depth and once at the 6" - 12" depth.

Analysis of the samples will be consistent with SW-846 for mercury analysis. All sampling equipment will be decontaminated between each borehole as well as each soil zone within each borehole to avoid possible cross-contamination.

3.1 Clean free mercury from Roof } Per AAG 2/4/88
Will re-roof spring 1988

4.0 SAMPLING AND ANALYSIS PROCEDURES

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4.0 SAMPLING AND ANALYSIS PROCEDURES

4.1 PROCEDURE FOR WIPE SAMPLING

The wet wipe sampling procedure employs the use of a sorbent cotton gauze pad which is dampened with a 10% nitric acid solution. A standard, decontaminated 0.25 m² template is used to delineate the correct amount of area to be wiped, or, if the template is not applicable, an area is measured off the mark.

A new pair of surgical gloves is used for taking each sample. The wet gauze pad is wiped, with straight and even strokes, from one side of the template to the opposite side, moving in one direction only. Each successive sweep slightly overlaps the previous sweep. When finished in one direction, the template area is wiped again in the perpendicular direction in exactly the same manner. As each wipe is used, it is placed in a prelabeled 250 ml sample container. The conditions surrounding each sample taken are carefully and thoroughly documented. As part of the sampling procedures, field blanks are collected to determine if specific analytical interferences are introduced by the gauze pads or nitric acid solution.

4.2 DOCUMENTATION

Detailed sample documentation is maintained by the sampling personnel. The primary segment is the field notebook which will contain the following site and sampling procedure information:

- Exact sample location
- Quantity and volume of sample containers
- Date and time of sampling
- Type of sample
- Depth of sample
- A sketch of the sample location
- Sample identification numbers
- A description of the weather
- The collector's initials

Any conditions pertaining the sample and location are also detailed.

Photographic documentation of each sample is used to support the written documentation. The following information about each photograph will be kept in the field notebook:

- Date, time, location, and sequential number in roll of each photograph
- Directional information
- Name of the photographer

The person responsible for the samples will fill out a Request For Analysis form designating the requested analytical parameters for each sample. This form also specifies site or case name, date and time of collection, exact sampling location, name of collector, method of preservation and name of person responsible for samples.

The legal record of possession (sample accountability) is established by the Chain of Custody Record. This chain of custody form identifies IT as the entity performing the sampling, lists each sample number and total number of containers per sample, gives a description of each sample, specifies the date and time of the relinquishment of the samples, and is signed by the person who assumes responsibility of the samples.

4.3 QUALITY ASSURANCE/QUALITY CONTROL

The objective of the Quality Assurance/Quality Control (QA/QC) plan is to provide a mechanism for the control and evaluation of data quality throughout the course of the project. The quality control data will be used to define the precision and accuracy for measured contamination values. In order to evaluate the sample container preparation procedures, and any potential contamination, a trip blank will be taken for each day of sampling. Each trip blank will consist of a set of sample containers filled with laboratory demonstrated analyte-free water. In addition to the trip blanks, field blanks will also be taken in order to evaluate possible cross-contamination from improper decontamination of sampling equipment.

IT's QA/QC procedures are on file with the NJDEP and include details of sampling handling and processing procedure, including preservation of samples, holding period, and reference test methods. All analysis will be performed by IT's state certified laboratory in Edison, New Jersey, according to accepted NJDEP methodologies for evaluating environmental samples for ECRA.

4.4 SAMPLING REQUIREMENTS FOR ASBESTOS REMEDIATION

Prior to, during and after removal of the indoor asbestos-insulated piping, IT will conduct air sampling to monitor the ambient air. Sampling requirements are as follows:

- Initial Monitoring - Construction area and personal monitoring shall be undertaken prior to the start of removal to determine if airborne asbestos concentration is above or below "action level". This will determine the level of personal protection required for the work.
- Ongoing Monitoring - The construction area and personnel will be monitored throughout the progress of the work to determine the appropriateness of the personal protection level selected.
- Clearance Level - When work is completed, clearance air samples will be taken in the construction area with a fan in operation to create air disturbance. Analytical results showing less than 0.01 F/CC of asbestos present will be necessary prior to opening the construction area for general occupancy.

Depending on the schedule selected by Union Carbide, clearance level samples can be analyzed in as little as 24 hours so that interruption of plant operations can be kept to a minimum.

Since other asbestos containing material may be present in the plant, Union Carbide and IT will mutually agree to further cleaning if the desired clearance levels are not achieved.

4.5 WIPE SAMPLE ANALYSIS

The number and location of the wipe samples to document the level of clean in the plant will be determined by Union Carbide and IT. The wipe samples will

be analyzed for mercury content and, again, a 24 hour turnaround time ~~is~~ available. This expedited analysis may be necessary in the event further cleaning is deemed appropriate given the analytical results.

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5.0 HEALTH AND SAFETY PLAN

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5.0 HEALTH AND SAFETY PLAN

5.1 GENERAL STATEMENT

This document describes the site health and safety plan that will be implemented and followed by IT and IT's subcontractors during the mercury decontamination operation at the Linde Air Products (division of Union Carbide) plant located in Linden, New Jersey.

All activities shall be conducted so that the health and safety of the project personnel and the public are protected. All operations will be in accordance with all federal, state, IT and Union Carbide regulations. This plan describes the respiratory protection program, engineering controls and personal protective equipment, industrial hygiene monitoring, emergency response program, medical surveillance and all other specifications required by the regulations promulgated under the Occupational Safety and Health Act (29 CFR 1910.120).

5.2 RESPONSIBILITIES

Health and Safety Representative

IT's health and safety representative is responsible for development of the health and safety plan and for any discussion on health and safety matters with state or federal agencies. Modification to this plan must be approved by the health and safety representative.

Site Project Manager

The site project manager is responsible for implementation of the health and safety plan. This includes communication of the health and safety requirements to all personnel participating in the project. Additional communication may be required by the site project manager to include supervision and consultation with the HS representative regarding appropriate changes to the health and safety plan.

Site Supervisor

The site supervisor shall ensure that all project personnel comply with the requirements specified in the health and safety plan. Any problems with the specific site requirements shall be communicated to the site project manager and the HS representative. The site supervisor shall be responsible for communicating all appropriate changes to the health and safety plan to all project personnel.

Field Crew

The field crew is responsible for understanding and complying with all site health and safety requirements. One member of the crew shall be assigned the responsibility of cleaning and maintaining the health and safety equipment and the decontamination area. All members of this group have been provided formal classroom training regarding the hazards and protection involved with this particular project.

5.3 TOXIC HAZARDS

Mercury - Acute poisoning due to mercury vapors affects primarily the lungs, in the form of acute intestinal pneumonitis, bronchitis, and bronchiolitis. Mercury is a primary irritant to the skin and mucous membranes, and occasionally may be a skin sensitizer.

Exposure to low levels of mercury over prolonged periods may produce symptoms that include weakness, fatigue, loss of appetite, loss of weight, insomnia, indigestion, diarrhea, metallic taste in the mouth, increased salivation, soreness of the mouth or throat, inflammation of the gums, black line on the gums, loosening of teeth, irritability, loss of memory, and tremors of the fingers, eyelid, lips and tongue.

More extensive exposures can produce extreme excitability, irritability, anxiety, delirium with hallucinations, melancholia, or a manic-depressive psychosis. In general chronic exposures to mercury will produce three

classical signs: gingivitis, increased irritability, and muscular tremors. Rarely are the three clinical symptoms seen together. Both acute or chronic exposures produce permanent changes to affected organs or organ systems.

Asbestos - Several major chronic syndromes have been described in connection with exposure to asbestos fibers. These include diffuse interstitial pulmonary fibrosis (asbestosis), benign pleural effusion, carcinoma of the lung, pleural plaques, and mesothelioma. Other consequences of exposure include laryngeal and gastrointestinal carcinomas.

Progressive pulmonary fibrosis is the most frequent occurrence, but it is usually gradual, with dyspnea upon exertion. Dyspnea increases in severity with time and is the chief cause of the disability.

The variation in clinical finding is dependent upon the duration, intensity, and type of exposure to asbestos. As asbestosis increases, all signs of chronic lung illness appear, including anorexia, weight loss, secondary infection (difficult to control), dyspnea (severe enough to cause orthopnea), and right heart involvement. In the cases of asbestosis with malignancy, chest pain usually becomes persistent.

HgX (Sodium Thiosulfate) Mercury Decontaminant

HgX is a stable compound commercially used for mercury decontamination. Over exposure from inhalation, eye contact or skin contact may lead to irritation. HgX should not be in extreme heat (above 200°F) due to the possibility of hydrogen sulfide and sulfur dioxide gas release. HgX is not compatible with acids and oxidizers and HgX powder and solution may cause corrosion to some metals.

5.4 STANDARDS

Threshold limit values refer to airborne concentration of substances which represent conditions that nearly all employees may be repeatedly exposed to day after day without adverse effect. These threshold limits are prescribed by the American Conference of Governmental Industrial Hygienist (ACGIH). They

are based upon the best available information from industrial experience and animal or human studies. Because of the wide variation in individual susceptibility, a small percentage of workers may experience discomfort from some substances at concentrations below the recommended values. It has been policy to use these guidelines for good hygienic practices; however, whenever applicable, stricter guidelines may be utilized.

Currently, exposure guidelines for asbestos are regulated by the Federal Occupational Safety and Health Administration (OSHA). These exposures are based upon the time-weighted average (TWA) concentration for a normal 8-hour workday and a 40-hour work week. Several chemical substances have short-term exposure limits or ceiling values which allow a maximum concentration to which workers can be exposed continuously for a short period of time without suffering from (1) irritation, (2) chronic or irreversible tissue damage, and (3) narcosis of a sufficient degree to result in accidental injury, impair self-rescue, or substantially reduce work efficiency.

The short-term exposure limit (STEL) is defined, in most cases, as a 15-minute time-weighted average exposure which should not be exceeded at any time during a work day even if the 8-hour average is within current limits.

Under certain chemical substance listings, there may appear a "skin" notation. This refers to the potential contribution to the overall exposure by the cutaneous route including mucous membranes and eye, either by airborne or direct contact. Little quantitative data are available describing absorption as a function of the concentration to which the skin is exposed. Biological monitoring should be considered to determine the relative contribution of dermal exposure to the total dose.

The following table represents the strictest set of guidelines currently established by either the ACGIH or OSHA.

TABLE 5-1

	<u>PEL</u>	<u>ACTION LEVEL</u>
Mercury	0.1mg/m ³	0.05 mg/m ³
Asbestos	0.2f/cc	0.1f/cc
HgX	None Available	

5.5 AIR MONITORING

Due to the potential exposure to mercury and asbestos, air monitoring will be conducted. This industrial hygiene monitoring will dictate the selection of respiratory equipment and personal protective clothing..

Information will be collected as to the concentration of mercury vapors in the work areas. All monitoring results shall be accurately documented and recorded to include calibration information and dates.

Mercury air monitoring will be performed using a Barach analyzer. Mercury vapor badges will be used weekly for decontamination personnel working in the exclusive zone. Periodic monitoring shall also be performed in the local contamination reduction zones where there may be mercury contamination. Colorimetric detector tubes will be used periodically to indicate current exposure levels of mercury vapor.

During handling of asbestos containing material (ACM), industrial hygiene air monitoring in accordance with 29 CFR 1926.58 will be implemented. Personal and ambient air samples will be taken using a mixed cellulose ester filter (MCEF), 0.8 um pore size, 25mm diameter cassette with an open-faced 50mm cowl extension made of fully conductive material. The flow rate for personal samples will be 0.5 l/min - 2.5 l/min up to 240 liters total volume, and for ambient air sample, the flow rate will be 6 l/min. - 11 l/min with a minimum volume of 100 liters. Pump shall be calibrated before and after each sample.

The quality assurance/quality control program for collecting these air samples will be as follows:

- The personnel and area sampling pumps will be calibrated before and after each use with the standard graduated bubble meter. All volumes will be adjusted to standard temperature and pressure, if necessary.
- A chain-of-custody form will be kept for each sample. The form will be signed by the person taking the sample, the person(s) transferring the sample to the laboratory, and by the laboratory receiving the sample.
- There will be one blank filter included with each set of air samples. The blanks will be labeled in such a way as to be indistinguishable for the field sample. The blank shall be used to determine precision and accuracy of the laboratory.
- Air temperature and humidity measurements should be obtained in order to validate the analytical results.

5.6 PERSONNEL PROTECTION

Equipment for personnel protection should be referenced to the potential contact and/or airborne levels of any mercury and asbestos as stipulated by the Health and Safety representative. Guidelines will be adhered to pending evaluation of the site conditions. It will be the responsibility of the regional Health and Safety representative to specify the level of protection required for the site.

5.7 LEVELS OF PROTECTION

Specific levels of protection will be used to safeguard IT employees on the job from potentially hazardous areas. Three distinct levels of protection are outlined for this project. The final determination for IT personnel and subcontractors of any required level of protection will be based upon the hazards and current conditions of the worksite. The only person who may make this determination is the Health and Safety representative. The situation requiring specific levels of protection are described in the following sections.

Level B Protection

Level B protection shall be required when the maximum level of protection is needed due to the toxicity, or potential airborne concentrations. These levels of exposure will usually exceed those recommended by ACGIH (TLV) or the OSHA Permissible Exposure Limit (PEL). This level of protection should be utilized when:

1. Filters have a potential of getting wet
2. Airborne asbestos concentration is above 10 times the PEL
3. Mercuric vapor concentration is above 10 times its PEL.

The following equipment will be used for Level B protection:

- Self-contained breathing apparatus or air supplied respirator which are NIOSH/MSHA approved.
- Hooded, Tyvek for asbestos and neoprene or PVC for mercury and sodium thiosulfate.
- Hooded, chemical resistant white Tyvek® (inner).
- Gloves - (Outer) - chemical resistant PVC or neoprene.
- Gloves - (Inner) - chemical resistant (latex).
- Boots/Shoes - (Outer) chemical resistant (PVC) or Neoprene with steel toes and outer-wrap Robar (PVC) booties.
- Hard hats
- Hearing protection (if necessary)

Level C Protection

Level C protection will be required when the toxic nature of the material and airborne concentration are known to be at or above action level but below 10 times PEL. Level C shall apply when starting out in each new area or phase.

The following equipment will be used for Level C protection:

- Full face, air purifying respirators with HEPA filters for asbestos and HgX and Mersorb for mercury vapors. All cartridges shall be approved by NIOSH/MSHA. Half face respirators may be utilized if accompanied by chemical resistant splash goggles.
- Hooded spandex for asbestos and neoprene or PVC for mercury and HgX.
- Unhooded, chemical resistant white Tyvek® suit (inner).
- Gloves - (Outer) - chemical resistant PVC or neoprene.
- Gloves - (Inner) - chemical resistant (latex).
- Boots/Shoes - (Outer) chemical resistant (PVC) or Neoprene with steel toes and outer-wrap Robar (PVC) booties.
- Hard hat
- Hearing protection (if necessary)

Level D Protection

The final level of protection that will be required at the site is level D protection. This type of protection requires the basic work uniform and will only be utilized when operating away from any potential contact or exposure to mercury. Level D protection should be used under conditions of support for operations where there are no indications for exposure or when asbestos and mercury vapor levels are below action level.

The following equipment will be used for Level D protection:

- Coveralls (as appropriate)
- Boots/shoes - safety or chemical protection with steel toes
- Safety glasses or goggles
- Hard hat
- Gloves (optional)

5.8 BIOLOGICAL MONITORING

Dependent upon work conditions and the degree of potential exposures, urine mercury analysis will be performed on certain employees. Those individuals at high risk should be monitored at a frequency of every two weeks. The moderate risk group of employees should be monitored every four weeks, and all other employees should be monitored at the end of the project.

The high risk group of employees will include those individuals potentially being exposed to airborne levels of mercury vapor in excess of twice the OSHA permissible exposure limit with regard to the use of air supplied respirators. The moderate risk group will include all employees potentially exposed to mercury vapors in air with regard to the use of air purifying respirators in excess of the OSHA permissible exposure limit. The lowest exposure will include all other employees working on the project.

5.9 ENGINEERING CONTROLS

Where feasible, engineering controls shall be used to maintain chemical exposures within the limits set forth above. This may be accomplished by the use of dust suppression techniques coupled with protective clothing and respiratory equipment of the appropriate level for exposures.

5.10 MEDICAL SURVEILLANCE

All personnel on-site will have successfully completed a preplacement or periodic (annual) physical examination. The examination includes:

- Medical and occupational history and physical exams (including a history of any respiratory disease)
- Complete blood count and differential
- Urinalysis (dipstick and microscopic examination)
- Audiometric examination

- Chest x-ray (posterior-anterior 14 x 17 inches)
 - Pulmonary function test (FEV_{1.0} and FVC)
 - SMA-25 or equivalent liver function test
-
- EKG for employees over 45 years old or when other complications indicate the necessity
 - Drug and alcohol screen

IT's Health and Safety Department maintains all employee medical records in the Torrance, California office. These records are continually reviewed and updated. IT shall maintain all medical records for a period of 30 years, and a copy of these records will be made available to any employee for either review or copying upon request. In order to obtain a copy of the medical record, a written release order must be completed and submitted to the Health and Safety Department.

The medical surveillance provided to employees includes a judgement by the medical examiner of the ability of the employee to use either positive or negative pressure respiratory equipment. Any employee found to have a medical condition which could directly or indirectly be aggravated by exposure to these chemical substances or the use of respiratory equipment will not be employed for the project.

All part-time employees and all non-project personnel visiting the site will be restricted unless evidence is presented that a medical examination covering all the above mentioned tests have been conducted with satisfactory results.

5.11 HEAT STRESS

The heat stress of employees on-site will be monitored by the Wet Bulb Globe Temperature Index (WBGT) technique. This method will require the use of a heat stress monitoring device, such as the Wibget Heat Stress Monitor (Reuter Stokes).

The WBGT shall be compared to the TLV outlined in the ACGIH TLV's Manual, and a work-rest regimen will be established, as necessary, according to the WBGT obtained. Note that 5°C must be subtracted from the TLV's for heat stress to compensate for the wearing of impermeable protective clothing.

One or more of the following control measures can be used to help control heat stress:

- Provision of adequate liquids to replace lost body fluids. Employees must replace water and salt lost from sweating. Employees must be encouraged to drink more than the amount required to satisfy thirst. Thirst satisfaction is not an accurate indicator of adequate salt and fluid replacement.
- Replacement fluids can be a 0.1 percent salt water solution, commercial mixes such as Gatorade or Quick Kick, or a combination of these with fresh water. Employees should be encouraged to salt their foods more heavily.
- Establishment of a work regimen that will provide adequate rest periods for cooling down. This may require additional shifts of workers.
- Cooling devices such as vortex tubes or cooling vests can be worn beneath protective garments.
- All breaks are to be taken in a cool rest area (77 degrees Fahrenheit is best).
- Employees shall remove impermeable protective garments during rest periods.
- Employees shall not be assigned other tasks during rest periods.
- All employees shall be informed of the importance of adequate rest, acclimation, and proper diet in the prevention of heat stress.

During periods of high temperature and/or humidity, the site HS representative will continually observe the workers for symptoms of heat stress especially in areas where protective clothing is being worn. If the body's physiological processes to maintain a normal body temperature fails, or are overburdened due to excessive heat exposure, a number of physical reactions can occur ranging from mild symptoms such as fatigue, irritability, anxiety, decreases in concentration and movement to death. Heat related problems are presented below:

- Heat Rash - This is caused by continual exposure to heat and humid air, and aggravated by chaffing clothes. Heat rash decreases a person's ability to tolerate heat as well as becoming an irritating nuisance.
- Heat Cramps - This is caused by profuse perspiration with inadequate water in-take and chemical electrolyte imbalance. This results in muscle spasm and pain in the extremities and abdomen.
- Heat Exhaustion - Increased stress on various organs to meet increasing demands to cool the body will result in signs and symptoms including shallow breathing, pale, cool, moist skin, profuse sweating, dizziness and lassitude.
- Heat Stroke - This is the most severe form of heat stress which must be treated immediately by cooling the body or death may result. Signs and symptoms include red, hot, dry skin, no perspiration, maisea, dizziness, strong, rapid pulse and coma.

5.12 TRAINING

All employees who work this particular jobsite should have completed a training program which includes, as a minimum, the following:

- Basic Safety Training - This course stresses the fundamentals of safety including the causes and prevention of slip, trip, and fall hazards, confined space entry, and heat stress.
- Hazards and Protection - This course deals with the identification, recognition, and safe work practices with toxic materials. The use of applicable protective clothing, respirators, and decontamination procedures. Respirator fit-test is provided to each employee attending the course.
- First Aid and CPR - It is necessary for most employees in this project group to have completed both first aid and CPR training.
- Site Specific Safety Training - This course covers the mandates of the project health and safety plan. In particular, this stresses emergency response procedures.

- Inorganic Mercury Awareness - This course is specific to the hazards and protection requirements associated with inorganic mercury exposure. Early symptoms (loss of weight, sleepiness, personality changes, etc.) will be reviewed in detail.
- Other Hazard Awareness - (Asbestos) - Information will be given concerning other materials to which the employee may be exposed. Information will include routes of exposure, toxic effects, appropriate protective equipment, medical surveillance, and the specific nature of the job which could result in exposure.

Most employees have already completed all of the training described, except the site specific training.

Tailgate Safety Meetings will be conducted at the beginning of each workshift, or whenever new employees arrive on the jobsite. This meeting is held to discuss the health and safety considerations for that particular day's activities, and outline the protective equipment and other materials necessary to perform the work.

5.13 WORK ZONES

The work area will include three separate zones. These zones will include the exclusion or "hot" zone, a contamination reduction zone, and a support zone.

The Exclusion Zone shall consist of the plant building, the hydrogen surge tank, the drum storage pad, and areas surrounding them as well as areas deemed contaminated by initial soil sampling. These zones will be clearly marked using caution barricade tape and other perimeter guards. Warning signs shall be posted in readily visible locations near these work areas. The information contained in these signs shall bear the following legend:

CAUTION
CONTAMINATED AREA
AUTHORIZED PERSONNEL ONLY

The Contamination Reduction Zone is the area used to decontaminate personnel and/or equipment. All personnel entering or leaving the exclusion zone shall pass through this area to prevent transport of contaminants from the exclusion zone. A decontamination unit shall be positioned at the entrance to the contamination reduction zone leading to the break trailer. Local contamination reduction zones shall be established immediately outside the exclusion zones. These areas shall serve to remove gross contamination and outer protected clothing.

The Support Zones will consist of the areas outside of the contamination reduction zone from the decontamination trailer. The break trailer located adjacent to the decontamination trailer shall serve as a rest area during lunch, and before and after work hours.

5.14 SAFE WORK PRACTICES

All work activities associated with the removal of the insulating materials containing asbestos fibers should be performed using glove bags. The pipe insulation will be wet down with amended water prior to removal. These techniques will aid in reducing the level of ambient asbestos fibers. All workers performing these activities shall be certified by the state of New Jersey as asbestos workers. An original copy of IT Corporation's Class A license shall be posted on-site. All contaminant materials shall be placed into containers displaying the following legend:

CAUTION
Asbestos and Mercury
Protective Equipment Required
Authorized Personnel Only

Special care should be taken to prevent injury by way of slip, trip, and fall hazards around the job site. All electrical switches must be off, especially when water is applied. Work being performed around compressors, motors, and other electrical equipment should be done after the power has been shut down and the electrical circuits have been tagged and locked out.

Work performed around the air compressors, as with all on-site activities, will be performed only by employees properly dressed in protective clothing as outlined by the HS representative. Floors are to be free of oil during dismantling of the compressors, if the floor conditions are considered to be unsafe.

Class III harness and lanyards may be necessary while working on top of the surge tank and the roof of hydrogen cylinder building. Individuals working on the surge tank may be secured to the center of the roof with the length of the lanyard to extend near the perimeter of the roof. Otherwise, employees will work from a manlift on a crane. Perimeter guards must be put around the roof edges of the hydrogen cylinder building.

Employees shall be properly trained in the use of cranes or other heavy equipment. It will be the responsibility of the site supervisor to check the proficiency of the operation. One standby person shall provide guidance to the heavy equipment operator using FM headsets or universal hand signals. If any crane equipment is used in a fixed location, the perimeter of the crane shall be barricaded with a perimeter guard. All cranes or heavy equipment will be inspected by the operator prior to being used every day. A record of these inspections must be documented by foreman or supervisor in charge.

Only properly protected personnel will be allowed into the hydrogen cylinder building. A decontamination line will be erected at the exit/entrance of the building and all personnel shall pass through this area when exiting or entering the building. All waste will be properly containerized and marked for disposal.

All work being performed will use the "buddy" system. Prior to the beginning of any work, buddies will be assigned. The team members will keep in visual contact with each other at all times. One team member will be responsible to ensure the safety of the team members. These team members should be aware of any slip, trip, and fall hazards along with any potential exposures to chemical substances, cold stress, and general hazards of the work area. All information regarding work to be performed, emergency procedures, and health

and safety hazards shall be reviewed before the work begins during a tailgate safety meeting. No work shall be conducted without completing these procedures.

At least one person shall be present at the decontamination lines. this person shall be in direct radio communication with the other team members in the exclusion zone or those team members shall have an air horn to warn of impending danger. Once the emergency signals have been sounded, the appropriate emergency procedures should be implemented accordingly. The emergency signals shall be developed at the beginning of the project and consistently reiterated during the duration of the project.

5.15 DECONTAMINATION PROCEDURES

A decontamination zone will be established at the exit/entrance to the compressed hydrogen cylinder building. A step-off area will be designated just inside the local contamination reduction zone. All employees entering from inside the exclusion zone shall pass through this area to remove their respirators and outer protective clothing. The employees may then walk over to the decontamination unit and enter the break trailer after washing their face and hands.

If there is a rip or tear in the employee's protective clothing, that individual shall remove the torn garment in the local decontamination area and new protective clothing will be issued in order for the employee to return back to work. The same procedure shall apply to defective respiratory equipment.

Personnel shall remove gross contamination and outer protective clothing only in the local contamination reduction zone. HEPA vacuums shall be located in these areas to remove excessive contamination prior to removing their outer garments. Showers will be required for all individuals working within the exclusion zones following each workshift. A system shall be installed to collect and/or filter the water from the decontamination shower trailer.

EQUIPMENT DECONTAMINATION

Any equipment used inside the exclusion zones shall be considered contaminated and will be cleaned before leaving the site. Verification that all equipment has been properly decontaminated will be the responsibility of the site project manager. Proper decontamination shall include wipe samples of the surfaces of all equipment. All contaminated solvents generated from the cleaning operation should be collected and containerized for disposal. Appropriate personnel protective equipment will be specified for this particular procedure. Acetone or other readily available solvents may be used for decontamination of tools and equipment.

5.16 RESPIRATORY PROTECTION PROGRAM

A comprehensive respiratory protection program has been established by IT. This program will be required in all locations where use of such equipment could lessen the potential for adverse health effects to any employee. The type of respiratory equipment will be continuously reevaluated based upon the current level of exposure. The only person able to modify the level of respiratory protection is the Health and Safety representative.

As part of the respiratory training program, each employee should have been instructed in the following elements:

- Nature of the respiratory hazard on the worksite and the appraisal of what may happen if the respiratory protection is not utilized.
- Use and proper fitting of the respirator.
- Cleaning, disinfecting, inspection, maintenance, and storage of the respirator.
- Proper selection, capabilities, and their limitations.

The respiratory protection training program should be conducted, documented, and recorded by the Health and Safety representative.

Routinely used respiratory equipment should be inspected, cleaned and disinfected daily to help assure proper hygienic practices. A safety equipment custodian should maintain the respirators. An inspection of these breathing devices will include the following:

- Examination of the head straps for breaks, loss of elasticity, broken or malfunctioning buckles and other attachments
- Examination of the facepiece for excessive dirt, cracks, tears, distortion, holes, or inflexibility.
- Examination of the exhalation and inhalation valves for any foreign material, cracks, tears, distortion, in the valve. Additional check will be made to inspect proper insertion, defective valve covers, or improper installation.
- Examination of air purifying elements for incorrect cartridge, expired shelf-life of the cartridge, cracks or dents in the cartridge or cartridge holder.
- Examination of proper insertion of the cartridges into the facepiece and a check of the gaskets inside of the cartridge holder.

When level C protection is required, respirator cartridges should be changed daily. This requirement may be modified by the Occupational Health and Safety representative depending upon the ambient exposure to the air contaminants.

The safety custodian should maintain the respiratory equipment and be knowledgeable in the cleaning and disinfection process which includes washing with detergent in warm water using a brush and then thoroughly rinsing in clear water. Finally, the respirators should be dried in a clean location after each day's use. If broken or malfunctioning parts are found during the cleaning process, these parts are to be replaced or new respiratory equipment shall be issued to the user.

The respiratory equipment should be stored in an area protected from any mechanical damage. These devices will also be stored in a location that provides protection against dust, heat, excessive moisture or damage by chemical contact. The storage area for the respirators should be in a readily accessible location.

5.17 GENERAL WORK PRACTICES

- At least one copy of this procedure shall be available at the worksite.
- Contaminated protective clothing, equipment, and other materials should not be removed from the worksite until they all have been properly decontaminated.
- Legible and understandable precautionary labels should be prominently affixed to various containers, if necessary.
- Removal of contaminants from protective clothing or equipment by blowing, shaking, or any other means of dispersing contaminants into the air will be prohibited.
- No food or beverages shall be present or consumed in the contaminated areas.
- No tobacco products shall be present or consumed in the contaminated area. Smoking shall be permitted only in a specific designated locations.
- All employees will be required to wash their face and hands prior to eating, drinking, or smoking.
- Use proper lifting techniques when handling bulky or heavy items.
- A charged fire hose or a sufficient quantity of fire extinguishers will be available at all times. Only spark resistant tools will be used where flammable or combustible dusts exist.
- No waste shall be taken from the site unless authorized and appropriately containerized.
- In the event of a possible spill and for decontamination of equipment, a six (6) millimeter polyethylene tarp will be used under areas for decontamination.

5.18 SITE SECURITY

- The site is currently secured with a chain link fence, which will remain in place.
- It is assumed that a security guard will be provided by Union Carbide 24 hours per day, seven days per week.
- A controlled access to the regulated area will be established. This controlled access will be through the decontamination unit.
- Only authorized personnel shall be permitted to enter the regulated area. No one shall enter the site without appropriate authorization.
- All persons entering the regulated area shall be equipped with appropriate personnel protective devices.
- All persons entering the regulated area must be familiar with and abide by the health and safety plan.

5.19 NEW JERSEY WORKER AND COMMUNITY RIGHT TO KNOW ACT

A central file is being kept at the ^ATYNEPCCO facility in Avenel, New Jersey which includes a completed workplace survey, hazardous substance fact sheets (furnished by the Department of Health), and a copy of the completed environmental survey, if ^Bavailable.

A notice will ^Dbe posted on the employee bulletin board to inform all employees as to the availability of the information in the central file. This bulletin board will also have notices of other information supplied by the Department of Health, the Department of Environmental Protection, and/or the Department of Labor which informs employees of their rights under this act.

Any employee or employee representative who requests a workplace survey, hazardous substance fact sheets, or an environmental survey will be provided this material within five working days.

The employees will be informed in writing and orally of the nature of the hazardous substance to which they may be exposed, the potential risks which the hazardous substance poses, and the procedures in the safe and proper handling of the hazardous substances.

All drums generated during the project containing hazardous waste will have the appropriate location label indicating the hazardous properties of the waste, and possibly the chemicals in the waste. Any contaminated materials collected on-site shall be properly disposed in covered receptacles and correctly manifested for disposal to a hazardous waste landfill.

5.20 EMERGENCY RESPONSE PLAN

Emergency response procedures have been developed for extraordinary conditions that may occur at the worksite.

General Response Considerations

Emergencies must be dealt with in a manner to minimize the health and safety risk to all site personnel. Work activities will be conducted in groups of at least two workers (buddy system) to provide continuous monitoring in the event of an emergency. Other signals should be reviewed such as those developed for restricted air flow or breathing difficulty. A stand-by person should be dressed and ready to assist in the event of a catastrophe.

The following procedures need to be implemented in case an emergency situation arises.

Responsibilities

The site project manager is responsible for directing the response activity in the event of an emergency. The responsibilities are as follows:

- Assessment of the emergency situation.
- Determine the required response measures and informing the site supervisor.
- Notify the appropriate response teams of the specific action that will be taken upon request.
- Determine and coordinate the on-site personnel actions for the particular emergency situation.
- Contact and coordinate with any governmental or

- regulatory agency.
- Immediate completion of the Supervisor Injury Report form upon occurrence of the accident.

Public Response Agencies

Before the start of the decontamination operation, the Occupational Health and Safety representative should develop a list of public response agencies which may be contacted depending on the nature of the emergency. The list of contact agencies should include the name, address, and telephone number of the following:

- Police Department
- Fire Department
- Emergency Ambulance
- Poison Control
- Area Hospital

The list of contacts should be posted ^A at several prominent locations on-site, particularly the contamination reduction zones and administrative trailer.

Accidents and Non-routine Events

The types ^D of emergencies outlined below are not all inclusive and the corresponding response procedures should not be considered inflexible. Every accident presents a unique event that must be dealt with by key trained personnel. The prime considerations are to provide the appropriate initial response to assist those in jeopardy without placing additional personnel at unnecessary risk.

Worker Injury

If a person working in an area is physically injured, American Red Cross first-aid procedures should be followed. Depending upon the severity of the injury or illness, emergency medical response may be obtained accordingly. If the person can be moved, that person will be taken to a location from the work

area where emergency first aid treatment can be administered. The local emergency medical facility should be contacted along with an ambulance.

The site project manager shall prepare a written report detailing the particular accident, its causes and consequence within three days from the time of the accident.

If the injury to the worker is chemical in nature, the following first-aid procedures will be instituted as soon as possible:

- Eye Exposure - If contaminated material gets into the eyes, the eyes will be flushed immediately at the eyewash station using copious amounts of water while lifting the lower and upper eyelids.
- Skin Exposure - If contaminated sludge or corrosive liquid material gets on the skin, the affected area will be washed with soap or mild detergent.
- Inhalation - If an individual inhales a volume of toxic or corrosive vapors, he will be removed to fresh air at once.
- Ingestion - In the event a person ingests a toxic liquid or solid material, medical attention shall be obtained at once.

Before initiating the mercury decontamination project, the following emergency equipment will be provided at each of the local contamination reduction zones.

- First aid station
- Emergency eyewash and shower wherever nitric acid is being utilized
- Two chemical fire extinguishers (20 lb., Type ABC)
- List of persons and telephone numbers to contact in the case of an emergency.
- Two self contained breathing apparatus (SCBA)

5.21 RECORD KEEPING

All exposure monitoring conducted during the project will be recorded along with the description of the field activities. The recorded results and the methodologies will be kept for a period of at least 20 years.

Records of completed formal health and safety training for any project employee is available upon request. Any health and safety training performed on site or prior to beginning the project will be documented accordingly.

All Tailgate Safety Meetings (daily) will be kept in the form of a log book for review by the regional Health and Safety representative. Tailgate Safety Meetings are conducted prior to the beginning of every workshift in order to discuss the work activity, potential exposure to various chemicals, physical hazards, types of protective clothing, and miscellaneous items of interest.

All logs and reports required by either local, state, and federal regulations will be kept and submitted accordingly.

5.22 COORDINATION WITH PLANT HEALTH AND SAFETY PERSONNEL

Prior to the commencement of any work, IT's health and safety representative will contact Union Carbide's plant health and safety personnel in order to coordinate activities at the site and to become familiar with local health and safety requirements. No work will begin until the plant health and safety personnel are knowledgeable about IT's work plan and have approved this health and safety plan.

6.0 COST PROPOSAL

D R A F T

6.0 COST PROPOSAL

6.1 COST ESTIMATE FOR INITIAL BID

Mobilization and Site Preparation	\$ 10,000.00
Product Line Removal (Mercury Contaminated)	28,000.00
Steam Line Removal (Asbestos Insulated)	23,000.00
Clean Compressors	74,000.00
Vacuum Pump and Drier Removal	8,000.00
Vacuum Plant	7,000.00
Analytical (field labor only)	3,700.00
Demobilization	\$ 7,000.00
SUBTOTAL	\$160,700.00

Transportation and Disposal (Includes IT Labor and Equipment) (Estimated Quantities)	37,000.00
INITIAL BID COSTS	\$197,700.00

6.2 SUPPLEMENTAL WORK

Roofing Material Removal	\$ 17,950.00
Pad Area Investigation	2,495.00
SUBTOTAL	\$ 20,445.00

Transportation and Disposal (Includes IT Labor and Equipment) (Estimated Quantities)	\$ 44,590.00
SUPPLEMENTAL WORK	\$ 65,035.00

6.3 ANALYTICAL UNIT PRICES

Asbestos Air Samples

Measure the airborne asbestos fibers required by law to monitor ambient and personnel during the removal process for the release of the work area upon abatement completion.

Standard Turnaround
24 Hour Turnaround

Comp. upgrade	\$25m
Closed Loop	25m
MCC	20m
Code violations	13m
Kuhn	15m
\$ 40.00 each	
\$ 120.00 each	

Wipe Samples - Mercury

Measurement in ppm the total mercury content
on a hard surface.

Standard Turnaround	\$ 47.00 each
24 Hour Turnaround	\$ 141.00 each

Soil Samples - Mercury

Measurement in ppm the total mercury content
in soil.

Standard Turnaround	\$ 47.00 each
24 Hour Turnaround	\$ 141.00 each

Above prices for analytical cost only (extraction, when required, analysis,
and hard copy results) and does not include QA/QC reporting.

Prices quoted for transportation and disposal are based upon estimated
quantities. Actual costs for transportation and disposal of contaminated
materials will be billed to Union Carbide at actual cost plus 20%.

D
R
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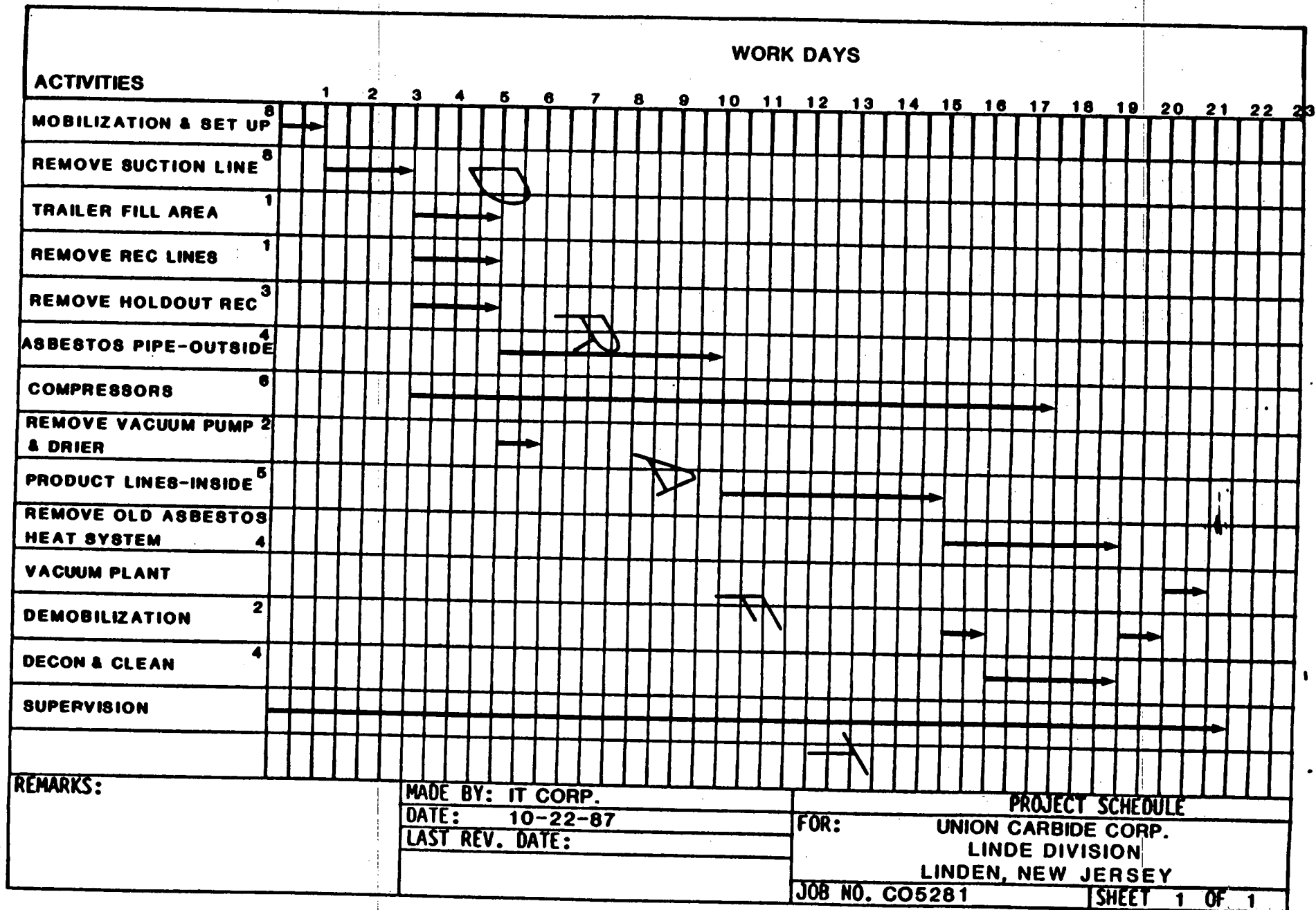


FIGURE 6-1

APPENDIX A
AGREEMENT ADDENDUM FOR ASBESTOS ABATEMENT

D
R
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F
T

ADDENDUM
ASBESTOS REMEDIATION AND RELATED SERVICES

Notwithstanding the provision of any purchase order, contract or other agreement between Client and IT to which this Addendum is attached or to which it refers, the following terms and conditions shall govern and apply to all services provided by IT which involve the presence of asbestos containing wastes or materials, including without limitation any survey, assessment, design, disposal, transportation remediation and health and safety services. In addition to the compensation provided for herein, Client's consent to these terms and conditions is deemed to be a material consideration for IT's agreement to perform these services.

1. Standard of Work

IT will perform services hereunder in a diligent and workmanlike manner, consistent with prevailing and accepted professional practices, all applicable and existing federal, state, and local laws, regulations and ordinances, and Client's standards and specifications as known to IT prior to commencing performance. IT further agrees to take all necessary precautions in the processing, handling, transportation and disposal of asbestos wastes and materials so as to minimize the potential for creating an unhealthful or unsafe work environment. Except as set forth above, IT makes no warranty, express or implied, in fact or by law, concerning any of the services which it furnishes pursuant to this Agreement.

2. Indemnification/Limitation of Liability

To the maximum extent provided by law, Client shall indemnify and hold harmless IT, its officers, directors, employees, agents, and subcontractors from and against any and all losses, damages, liabilities and expenses (including legal fees and reasonable costs of investigation) resulting from or arising out of injury or death of any person (including without limitation injury or death to employees of IT, Client, or any third party) or loss of or

damage to property (including without limitation loss or damage to property belonging to IT, Client or any third party) resulting from conditions existing at the site or prior to IT's arrival or from the performance by IT of services, including any health and safety services provided hereunder, notwithstanding the concurrent or contributory negligence of IT, its agents and employees, except as to such losses, damages, liabilities and expenses as are caused by the willful misconduct or sole negligence of IT. In no event shall IT's liability under this Agreement exceed the total compensation to be paid IT hereunder or the amount of insurance coverage applicable to IT's obligation hereunder, whichever amount is less.

3. Health and Safety

IT will provide health and safety monitoring, directives and guidelines to its employees, as well as those of Client and Client's contractors, but assumes no responsibility or liability for the completeness and efficiency of such services. In furtherance of its objectives, IT may provide Client and its employees with certain information regarding health and safety practices and procedures to be followed, including procedures for processing, handling and disposal, as well as health monitoring and toxicological data. Any information supplied by IT shall be the most current information known to IT relevant to the work to be performed hereunder, but such information is provided without warranty or representation as to its completeness or suitability.

At all times during the performance of services hereunder, it shall be Client's sole responsibility to provide its employees with a safe and healthy workplace, using, employing where applicable such information as is or may be provided by IT.

Client agrees to promptly report to IT all cases of death, occupational disease, and OSHA-recordable injury caused by or allegedly resulting from the treatment and removal of asbestos containing materials or waste.

Nothing contained herein shall be construed as imposing any duty upon IT to provide protective clothing or health and safety equipment to Client's

employees or to impose liability upon IT for the failure or refusal of Client's agents and employees to comply with IT's health and safety guidelines and directives.

4. Disclaimer

IT and Client acknowledge that hazards are involved in providing the services described hereunder. Client further acknowledges that state, federal, and local regulatory guidelines and standards for asbestos acceptable exposure levels and removal procedures are subject to change and that IT assumes no responsibility for the consequences, legal or otherwise, which may result from a change in federal, state, or local laws and regulations governing asbestos removal, allowable levels and concentration or the standards and guidelines for treatment and removal.

5. Insurance

IT presently maintains insurance coverage in the face amount of \$1 million applicable to any injury or property damage attributable to or claimed to be attributable to exposure to asbestos containing wastes and materials. IT agrees to use its best efforts to maintain said coverage or similar coverage in effect during the term of this Addendum, together with such other insurance coverage as may be provided pursuant to the Agreement to which this is attached. Notwithstanding the foregoing, nothing contained herein shall be construed or interpreted as requiring IT to maintain any level or type of insurance coverage where coverage is no longer available or where the cost of obtaining such coverage is in IT's sole discretion prohibitive or economically unreasonable.

Except as set forth above, in all other respects the rights and obligations of IT and Client shall be as set forth in the Agreement to which this Addendum shall be attached.

Executed this _____ day of _____, 19____

IT CORPORATION

BY: _____

CLIENT

BY: _____

D R A F T

I. T. Corporation

UC 12A-07C (12-77)

PURCHASE AUTHORIZATION AND SAVINGS RECORD

DATE

2/19

ORDER OR CONTRACT NO. OR DATE OF AGREEMENT

P-905-1-195039

COMMODITY, JOB OR SERVICE

Remedial Work - Phase I - Linden, New Jersey

COMMODITY CODE

3570F

PLEASE INDICATE YOUR REVIEW AND/OR APPROVAL OF PURCHASE AND FORWARD

DEPARTMENT

NAME

SIGNATURE

DATE

Packaging Operations

A. A. Galvan

Packaging Operations

C. R. Koch

Linde

G. Hoeing

Gas Products Production

N. A. DiFranco

N. A. DiFranco 2/22/88

Gas Products Engineering

J. S. Siepierski

Area Technical Mgr.

J. F. Coveney

RETURN TO →

C. F. Cook - Tonawanda

COMMITMENT RESUME

PMS/HFES CONTACT

TOTAL PRICE OR ESTIMATED VALUE

\$150,000.00

CONTRACT PERIOD, SHIPMENT OR DELIVERY DATE

REQUIRED BY SEC. 147

☒ YES ☐ NO

COMPLETED

☒ YES ☐ NO

PURCHASE AUTHORITY

PERSON CONTACTED

D. H. Mueller

☐ REQUISITION☐ LETTER DATED

OTHER (EXPLAIN BELOW)

DATE

2/8/88

BY

PHONE ☒LETTER ☐PROCUREMENT PLAN COPY ☐

A OF USAGE

CURRENT PUBLISHED SOURCE AND PRICE

REASON IF NO CONTACT

BASIS FOR AWARD

☐ EVALUATED LOW PRICE☒ NEGOTIATED PURCHASE☐ BEST DELIVERY NOT LOW PRICE☐ OTHER☐ ENGINEERING OR USER PREFERENCE

SAVINGS

PURCHASING SAVINGS

QIP

REMARKS:

See Attached Evaluation.

(1) NEW VENDOR \$ \$

(2) ALTERNATE MATERIAL

(3) CHANGED QUANTITY

(4) AVOIDANCE INDUSTRY- WIDE PRICE INCREASE

(5) DIRECT PRICE REDUCTION

(6) OPTION

(7) SPARE PARTS

(8) ESCALATION

(9) FINANCIAL TERMS

(10) INVENTORY REDUCTION

(11) TRANSPORTATION

(12) PACKAGING, MATERIALS HANDLING

(13) CONSTR., MAINT. & SERVICE CONTRACTS

(14) OTHER

TOTAL SAVINGS \$ \$

PURCHASING AGENCY (SIGNATURE)

**PURCHASE DOCUMENT
REVIEW AND APPROVAL RECORD**

ORDER OR CONTRACT NO.
OR DATE OF AGREEMENT

P-905-1-195039

VENDOR

I.T. Corporation

COMMODITY, JOB OR SERVICE

Remedial Work - Phase I Linden, NJ

CODE NO.

3570F

DEPARTMENT	NAME	APPROVAL SIGNATURE	DATE
Law Department	J. J. Ferrara		
Purchasing	D. H. Mueller		
Mgr. Procurement	D. L. Schmiede		
VP Tona. Operations	G. D. Albertson		

RETURN TO: C. F. Cook - Tonawanda

NOTE: PLEASE REFER TO ATTACHED "PURCHASE AUTHORIZATION & SAVINGS REPORT" DATED:

REMARKS

UC 334-103
12/75

Competitive bids for removal of mercury contamination at Linden, New Jersey were solicited from the company's listed below:

- 1) Del Tray Construction Service, Inc.
- 2) SCA
- 3) Advance Environmental Technology Corp.
- 4) International Technology Corp.

I.T. Corporation was the only bidder to submit a proposal. The work will be performed on a cost plus a fee basis because the scope of work cannot be completely defined. I.T. Corporation has extensive experience in the handling and disposal of hazardous waste. The labor rates and schedule of fees submitted by I.T. Corporation are competitive with prevailing rates for this type of work.

Due to schedule restraints there is insufficient time to solicit additional bids. It is recommended that a contract be awarded to I.T. Corporation on the basis of a sole source bid.

A contract will be executed pending approval of the contract draft by the UCC Law Department and finalization of the specifications regarding safety and environmental procedures for performing the work.

The estimated cost for this contract is shown below.

Mobilization and Site Preparation	\$ 10,000.00
Inside Product Line Removal (Mercury Contaminated)	\$ 12,200.00
Inside Steam Line Removal (Asbestos Insulated)	\$ 11,000.00
Clean Compressor #3	\$ 35,000.00
Clean Compressor #1 and #2	\$ 40,000.00
Vacuum Pump & Drier Removal	\$ 8,000.00
Vacuum Plant & Roof	\$ 7,000.00
Demobilization	\$ 7,000.00

Sampling & Analysis:

Labor (40 Hrs. @ \$65/Hr.)	\$ 2,600.00
Compressor #1 (7 @ \$150/Hr.)	\$ 1,050.00
Compressor #2 (7 @ \$150/Hr.)	\$ 1,050.00
Compressor #3 (7 @ \$150/Hr.)	\$ 1,050.00
Building Walls & Ceilings (10 @ \$50/Hr.)	\$ 500.00
Building Floors (6 @ \$150/Hr.)	\$ 900.00
(2 @ \$50/Hr.)	\$ 100.00
Field Banks (8 @ \$50/Hr.)	\$ 400.00


SUB-TOTAL --- \$137,850.00

CONTINGENCY - \$ 12,000.00

SAY ----- \$150,000.00

NOTE: It is planned to award a separate contract for disposal of any hazardous waste resulting from work performed on this contract.

The cost associated with disposal of the hazardous waste has a large potential variance and cannot be estimated at this time. Mr. D. H. Mueller and Mr. N. A. DeFranco will determine the acceptable means and vendor for final disposal of all hazardous waste.


C. F. Cook

CC: AAG
TEM
Add Sales. Somerset

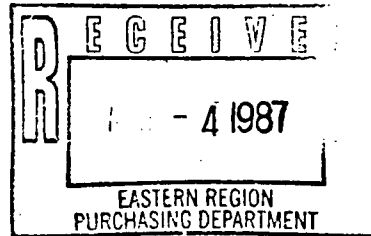
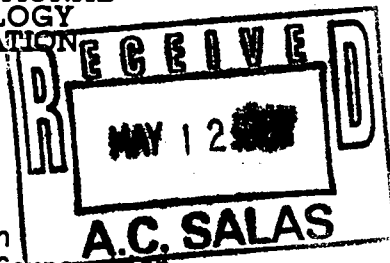
5/5

Don Runner



May 1, 1987

Ms. J. Merriman
Union Carbide Corporation
Linde Division
308 Harper Drive
Moorestown, N.J. 08057



Dear Ms. Merriman:

(IT Ref: #E01072R)

International Technology Corporation (IT) is pleased to submit this proposal in response to your Invitation to Bid No. 7369 for the Decontamination Project, Linden, New Jersey.

IT is submitting this fixed price proposal to Union Carbide for the furnishing of all labor, supervision, necessary tools and equipment, scaffolding, falsework, and any material and supplies required by the Contract Documents and the Invitation to Bid #7369 dated 4/6/87 (that are not stipulated to be supplied by Union Carbide) with specific clarifications and exceptions listed herein. The proposal is based upon our site inspections required for the Linden plant decontamination within Union Carbide Corporation, Linde Division, Southwood Avenue, Linden, NJ, location (hereinafter referred to as the "Site").

Our firm is the leading environmental management company, providing a comprehensive range of fully integrated services. For over 50 years, we have provided decontamination and related remediation services to clients throughout the nation. We have wide experience in decontamination, demolition, and disposal projects involving hazardous substances and wastes.

IT's extensive sampling and analysis capability will ensure that data is gathered efficiently and thoroughly and presented clearly to Union Carbide. Our strict Health and Safety Program will ensure that all work is performed safely and in full accordance with the most recent OSHA requirements as per 29 CFR Part 1910.120.

Responsiveness and responsibility to our clients in technical quality, timing, and cost control are recognized as the basis for IT's leadership in the field of environmental management.

In accordance with the section SPECIAL CONDITIONS, IT states the following specific exceptions:

- Exceptions to your Construction/Maintenance Order Additional Terms

Item 3 Force Majeure should read - "Neither party shall be liable for fault or delay caused by any occurrence beyond its reasonable control, including but not limited to fires, strikes, accidents, acts of God, and delays of common carriers."

Ms. J. Merriman
Union Carbide
May 1, 1987
Page 2

Item 5 Warranty should read - "If at any time within one (1) year from completion of the Work as evidenced by final payment it shall appear that any of the materials furnished by Contractor or any of the Work is not strictly in accordance with the terms of this Order, Owner may require Contractor to replace such materials and correct any defects in the Work at Contractor's sole expense."

Item 7 Other Contractors should read - "Owner reserves the right to let other contracts related to the Work. Contractor shall afford other contractors reasonable opportunity for the introduction and storage of their materials and the performance of their work, and shall properly connect and correlate the Work with theirs. Should Contractor cause negligent damage to the work of such other contractor, Contractor agrees to cause such work to be repaired, or to be removed and replaced, at Contractor's sole expense."

Item 9 Liens should read - "Contractor shall indemnify and save harmless Owner from laborers', mechanics', materialmen's liens and all other liens and charges upon the Work and/or upon the site of the Work, arising out of negligent work performed and/or materials furnished by Contractor hereunder."

Item 17 Indemnity, Physical Damage Responsibility should read - "Contractor shall indemnify and save harmless Owner, any party named herein as the party on whose property the Work is being performed, and their employees and agents, against all claims, liabilities, losses, damages and expenses of every character whatsoever, for bodily injury, sickness and/or disease, including death resulting from such bodily injury, sickness and/or disease sustained by any person (including but not limited to employees of Owner, of Contractor or of a subcontractor of Contractor) while in, on or about the property of Owner or the site of the Work, if or where such injury, sickness, disease and/or death arose out of or was in any way connected with the negligent work or omission of contractor, whether or not such injury, sickness, disease and/or death was caused by, resulted from, or was in any way connected with the negligence of Owner, the aforesaid party, or any of their employees or agents. Contractor shall be responsible for, and hereby assumes all liability for, loss or destruction of, or damage to, all tools, machinery, equipment and appliances owned by Contractor, or loaned or leased to Contractor by other than Owner, and all personal property of Contractor's employees, whether or not such loss, destruction or damage is caused by, arises out of, or was in any way connected with the negligence of Owner, the party named herein as the party on whose property the Work is being performed, or any of their employees or agents."

Ms. J. Merriman
Union Carbide
May 1, 1987
Page 3

Item 19 Taxes should read - Prices or rates include all applicable taxes in effect at time of contract signing (except those on or measured by net income, which taxes are to be borne solely by Contractor).

IT Prefers to add the following clause:

Limitation of Liability

For any damage caused by negligence, including errors, omissions, or other acts, or for any damages based in contract, or for any other cause of action, IT's liability, including that of its employees, agents, directors, and officers, shall not exceed the sum of one million dollars (\$1,000,000). All such claims, including for negligence or any other cause whatsoever, shall be deemed waived unless made by Union Carbide in writing and received by IT within one (1) year after IT's completion of the services with respect to which the claim is made, or, if such services are furnished in connection with the construction of or modification of any installation by Union Carbide, within one (1) year from the date of substantial completion of such installation, but in no event more than three (3) years after IT's completion of such services.

Notwithstanding any other provision contained herein, in no event shall IT be responsible for any incidental, indirect, impact, or consequential damages (including loss of profits) incurred by Union Carbide or any third party as a result of IT's performance or nonperformance of this Agreement or by application or use of reports or other work prepared or performed hereunder.

- Terms and Conditions to General Work Condition: Clarifications and Specifics
 1. If, due to the requirement of Union Carbide, the work must stop and restart at a later date, there will be either a standby charge or a demobilization and remobilization charge to be estimated at that time, presented to Union Carbide as a change order and accepted as an extension of time and with costs billable as an addition until the restriction is removed or the project scope altered to remove the delay.
 2. Whereas there is no provision for determining the levels of mercury contamination on the walls, ceiling or floor, IT will not be responsible for any residual mercury contamination on these surfaces except where due to gross negligence.

Ms. J. Merriman
Union Carbide
May 1, 1987
Page 4

*Detection level?
in wipe test?*

3. After completion of each task, IT will certify by chemical analysis the level of Hg contamination and documentation of work performed. A set level of clean is not herein given by Union Carbide or specified to be met by IT.
4. Whereas the interior of the gas holding tank is not known, the estimated quantity of hazardous waste cannot be determined until after opening and inspection, which IT will perform.
5. Union Carbide will provide an on-site storage area of sufficient size for hazardous and non-hazardous materials, transportation, and disposal of all waste.

• Terms and Conditions to Scope of Work: Clarifications and Specifics

1. IT will not be held responsible for the internal compressor parts other than preserving them per the provided expert's directions.
2. IT's quote includes the men and materials to sample each wall once. Cleaning will be quoted on an as needed basis.
3. IT's quote includes the labor hours to paint the floors once. Materials and application to be chosen and provided by Union Carbide. Alternately, Union Carbide can specify and, under a Change Order, IT will obtain all materials per the standard rate tables attached.
4. Cost to clean floors will be estimated after wipe sampling.
NO - include cost of removing the floor
5. Union Carbide's specifications for determining extent of soil contamination were not clarified in the specification or job walks. IT has quoted 2 samples, a surface to 1/4" on concrete and two samples 0-6" in soils for hydrocarbons and PCB's. Additions would be quoted upon request.
6. IT's quote includes vacuuming ~~visible mercury from the roof~~. *Do vacuum all floor*
7. IT's quote includes sampling the 27 receivers only. X
8. Whereas the status of the interior bladder of the gas holding tank is unknown, this quote only includes one day to remove bladder. Decontamination and/or Hg removal prior to bladder movement to the on-site holding area would be quoted as a Change Order after the inspection (reference General Conditions, item 4).

*Is there
to this change form?*

*Direct means
Depth + Surface
(3 dimensions)*

Ms. J. Merriman
Union Carbide
May 1, 1987
Page 5

9. A detailed quote for cleanup, removal and preparation of oil contaminated soil and concrete will be provided after extent of contamination has been determined. Optional item 6 is for 2 days of work. *Removal of how much soil?*

10. IT believes there may be asbestos other than that identified in the quote, therefore, post cleaning air samples will be to determine present level only. *Must be removed*

11. Since the present level of contamination and level of clean is unknown, this quote is for a one pass chemical cleaning only of all equipment and pipes specified for cleaning and/or scraping. *cleaning -*

We look forward to performing the Union Carbide Decontamination Project promptly, thoroughly, and efficiently.

If you have any questions about the attached proposal, or about our company, please call me or Ray Lidstrom at (201) 225-2000.

Sincerely,

Kenneth M. Sullivan

Kenneth M. Sullivan
Project Manager, Remediation

Ray Lidstrom

Ray Lidstrom
General Manager

mm

Attachment

PROPOSAL
Invitation to Bid No. 7369
for Decontamination Project - Linden
Union Carbide Corporation
Linde Division
Southwood Avenue, Linden, NJ

Submitted by	<u>IT Corporation</u>
Address	<u>165 Fieldcrest Avenue</u> <u>Edison, NJ 08818-7809</u>
Telephone No.	<u>(201) 225-2000</u>
Date	<u>May 1, 1987</u>

Union Carbide Corporation
Linde Division
308 Harper Drive
Moorestown, NJ 08057

Attention: J. Merriman

Gentlemen:

The undersigned (hereinafter sometimes referred to as "Contractor") proposes to furnish all labor, supervision, necessary tools and equipment, scaffolding, falsework and any material and supplies required by the Contract documents and your Invitation to Bid No. 7369, dated April 6, 1987, required for the Linden plant decontamination within your Union Carbide Corporation, Linde Division, Southwood Avenue, Linden, NJ, location (hereinafter sometimes referred to as the "Site"), and exceptions and clarifications per IT proposal E01072R dated May 1, 1987.

PRICE

The Work will be performed for a fixed Contract Price of One hundred thirty-one thousand one hundred eighty dollars (\$ 131,180.00) per page

3 of 3 clarifying included items.

The above Contract Price is firm and not subject to escalation, and includes all the Contractor's profit, costs, and charges for labor, insurance taxes, overhead, and all other expenses.

SUBCONTRACTS

Contractor intends to subcontract the following parts of the Work: (Indicate those which are Minority owned)

<u>Work</u>	<u>Subcontractor</u>
None	

COMPLETION

Contractor agrees, if awarded the contract, to begin work within 20 calendar days after notice of award and complete the installation within 30 calendar days after award of the contract. Attached is a bar chart schedule of the various phases of the work. Does not include additional time needed if optional work is authorized.

REMARKS

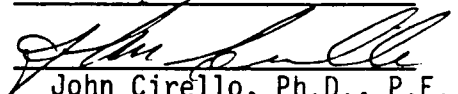
Page 3 clarifies tasks bid.

Exception & clarifications per IT letter of May 1, 1987 attached and made a part of this quotation.

Insurance Policies are in existence and can be resubmitted if required.

Contractor declares that he has carefully examined and understands the Invitation to Bid, and the Contract Documents and has satisfied himself as to the nature and location of the Work, the character and quality of the materials involved, the character of the equipment and facilities necessary for the prosecution of the Work, the general and local conditions at the Site, and all other matters which can in any way affect the Work to be done.

FIRM NAME IT Corporation

By 
John Cirello, Ph.D., P.E.
Its Vice President

COST BREAKDOWN FIXED PRICE

1	Mobilization/Site Management	\$ 29,300
2	Compressors, Disassembly and Single Pass Washing	41,440
3	Interior Process Piping, Removal, Washing, Placement in holding area	25,200
4	Walls - Samples	600*
5	Floors - Samples and Coating Application	1,250
6	Oil Contaminated Soil Area and Pad - (4 samples)	760
7	Roof - Visable Hg Removal	700
8	Cooling Towers - Sludge Sample	500
9	Receiver Bank Header - Sampling	1,690
10	Outside Process Piping - Removal	26,240
11	Hydrogen Gas Holder - Inspection & Sample	1,500
12	Oil Storage Pad Single Pass Wash	<u>2,000</u>

Fixed Price Quote \$131,180

* Cleaning walls will be estimated if samples show contamination

OPTIONAL ITEMS

6	Oil Contaminated Soil - labor, equipment, including mob and demob to excavate and move to load out storage area the contaminated soils. Estimating using a case 580 backhoe/loader and field crew of 3 men for 2 days	\$ 4,000
10	Gas Holder Disassembly & Bladder movement to storage area assuming no cleaning required	28,845 <i>what for?</i>
13	Asbestos Removal of specified areas	39,520

BAR CHART SCHEDULE

Page: 1- 1

ACTIVITY DESCRIPTION	01 JUN 87	08 JUN 87	15 JUN 87	22 JUN 87	29 JUN 87	06 JUL 87	13 JUL 87	20 JUL 87	27 JUL 87	03 AUG 87	10 AUG 87	17 AUG 87	24 AUG 87	31 AUG 87	07 SEP 87	14 SEP 87	21 SEP 87	28 SEP 87	05 OCT 87	12 OCT 87	19 OCT 87
10101 CLEAN COMPRESSOR#1	*	EEE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
10102 COMPRESSOR #2	*	EEE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
10103 COMPRESSOR #3	*	EEE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
10204 ASBESTOS OUTSIDE	*	EEEE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
10206 ASBESTOS INSIDE	*	EEEE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
10305 PROCESS PIPING OUTS	*	EEE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
10306 PROCESS PIPING INSI	*	EEE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
10414 SAMPLE WALLS	*	EEE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
10510 PAINT FLOOR	*	EEE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
10711 VACUUM ROOF	*	EEE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
10814 SAMPLE GAS HOLDING	*	EEE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
11012 MOBILIZATION	EE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
11013 DEMOBILIZATION	*	EEE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+



Union Carbide Corporation
Specialty Gas Plant
P.O. Box 237
Keasbey, New Jersey 08832

February 9, 1988

International Technology Corporation
Attn: Leah J. Webb
165 Fieldcrest Avenue
P. O. Box 7809
Edison, New Jersey 08818-7809

Re: Linden, New Jersey Plant Cleaning

Dear Ms. Webb:

Please incorporate the following clarifications into the proposal scope of work:

A. COMPRESSORS

1. Dismantle compressors -
 - a) Begin with #3, then #2 and #1;
 - b) Dismantlement shall be under the technical direction of a UCC representative.
2. Standard of Cleanliness -
 - a) If mercury is detected in the wipe test, the cleaning procedure shall be repeated;
 - b) Critical and sealing surfaces shall be identified by UCC representative for protection from corrosive agents.
3.
 - a) Reassembly of compressor #2 and #3 by others;
 - b) Compressor #1 is intended to be scrapped by UCC.

4. Schedule

Contact Award	2-19-88
Cleaning work starts on	
Compressor #3	3- 1-88
All Compressor #3 parts	
cleaned	3-14-88
Reassembly complete,	
ready for shipment	
to Texas	3-21-88
Arrival Compressor #3 @	
Texas site	4- 1-88

Ms. Leah J. Webb
Page 2
February 9, 1988

B. PROCESS PIPING AND EQUIPMENT

1. a) Process piping shall be removed as described in P. 2.3 of the 11/87 proposal C05281
2. Steam pipe removal shall be as described in par. 2.4 of the 11/87 proposal C05281
3. a) The vacuum pump and driers inside the plant will be disconnected from the system, disassembled and disposed. No mercury cleaning other than an external vacuum will be performed.

C. FLOORS, WALLS, CEILING AND ROOF

1. Upon removal of the old product lines and asbestos pipe, the entire building will be internally vacuummed using a Hg. vacuum unit.
2. The Roof will be vacuummed using a Hg. vacuum unit.

D. DISPOSAL

1. Rinsate from compressor cleaning will be staged in 55 gallon drums. Union Carbide and IT should agree on disposal alternatives. Taking into consideration waste minimization and land disposal restrictions.
2. Solid waste should be disposed of at a site agreeable to Union Carbide and ITC.

The proposal should include a target estimate for the work with the following \$ breakouts:

-
- cleaning of compressor #3
 - mobilization

I would appreciate receipt of your proposal by this Friday, February 12, 1988.

Please direct the original as before to Mr. D. H. Mueller in Danbury, Connecticut with copies to:

Mr. C. F. Cook
Union Carbide Corporation - Linde
P. O. Box 44
Tonawanda, New York 14151

Ms. Leah J. Webb
Page 3
February 9, 1988

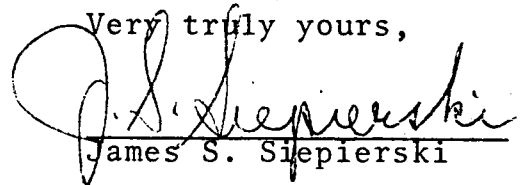
Mr. N. A. DiFranco
Union Carbide Corporation - Linde
P. O. Box 6744
Cottontail Lane
Somerset, New Jersey 08875-6744

Mr. A. A. Galvan
Union Carbide Corporation - Linde
308 Harper Drive
Moorestown, New Jersey 08057

Mr. J. S. Siepierski
Union Carbide Corporation - Linde
P. O. Box 44
Tonawanda, New York 14151

Thank you for the tour of IT's excellent facility yesterday and the enthusiasm IT's staff has shown to support Linde on this project.

Very truly yours,


James S. Siepierski

JSS:tm

cc: D. H. Mueller
A. A. Galvan
N. A. DiFranco
C. F. Cook
G. D. Courson - UCC Linde Houston Com. Park
J. F. Coveney

PROCUREMENT DEPARTMENT
Tonawanda, New York
February 10, 1988

RECEIVED

RECEIVED

FEB 16 1988

MEMORANDUM TO: A. A. Galvin (Moorestown)
J. S. Siepierski

FEB 16 1988

UNION CARBIDE CORP.
SOMERSET REGION OFFICE
SOMERSET, N.J.

FROM: C. F. Cook

N.A. DiFRANCO

COPY TO: J. F. Coveney
N. A. DiFranco (Somerset)
J. W. Fahn
J. J. Ferrara (Danbury)
J. G. Lee (Danbury)
T. E. Martinez (Moorestown)
D. H. Mueller (Danbury)
D. L. Schmiede

SUBJECT: Mercury Decontamination/Disposal at Linden, New Jersey

D. L. Schmiede and this writer met with D. H. Mueller (Purchasing) and J. J. Ferrara (Law Department) to discuss methods of contracting for decontamination and disposal of mercury waste required at Linden, New Jersey. The attached "rough draft" of the specification for this work was reviewed.

The possibility of using the existing waste disposal contract with I. T. Corporation or our standard CMU contract was considered. In either case, changes would be required to the contract form that will need to be reviewed by the Law Department.

Due to the urgency of schedule (schedule value of \$1,000 per day), John Ferrara advised that we consider using an existing remedial and waste disposal contract that has been approved by the Law Department and may require only minor changes to the contract form. Purchasing will review the above contracts to determine which contract form best suits our needs for this project.

A final draft of the contract will be sent to I. T. Corporation for review and acceptance. A copy will be forwarded to D. H. Mueller and J. J. Ferrara for review and approval. They agreed to review the contract draft and attempt to expedite the process due to the urgency of the situation.

D. H. Mueller recommended that we defer a decision on the method of disposal and selection of a disposal contractor until the characterization of the waste has been determined by I. T. Corporation. At that time, N. A. DiFranco and D. H. Mueller will be appraised of the situation so that a disposal method and contractor can be selected.

The attached "rough draft" of the specifications needs to be organized and finalized to incorporate the complete scope of work to be performed by I. T. Corporation.

In addition, a specification needs to be written for the work to be performed by Kuhn Welding.


I. T. Corporation has agreed to send their proposal to my office on February 12, 1988. The proposal will include a schedule of fees and a target estimate to complete the work in accordance with scope definition presented to them at our meeting on Monday, February 8, 1988.

A UCC representative will need to be assigned full time to oversee the work and administer a cost plus contract for reasons listed below:

1. Administer a cost plus contract for effective cost control.
2. Monitor safety in an existing operating plant.
3. Make critical decisions on clean-up procedures on a timely basis.
4. Track actual cost against target estimate and monitor scope changes that will impact the target estimate so that necessary approvals can be secured in the event of exceeding the authorization on the PASR.

Prior to execution of a contract, signature approval will be required from the following:

J. S. Siepierski
J. F. Coveney
D. L. Schmiede
J. W. Fahn
J. J. Ferrara
N. A. DiFranco
D. H. Mueller
Packaged Gases Requisitioners


C. F. Cook

CFC:11b/8836J
Attachment

SCOPE OF WORK CLARIFICATIONS

COMPRESSORS

1. Dismantle compressors -

- a) Begin with #3, then #2 and #1;
- b) Dismantlement shall be under the technical direction of a UCC representative.

2. Standard of Cleanliness -

- a) If mercury is detected in the wipe test, the cleaning procedure shall be repeated;
- b) Critical and sealing surfaces shall be identified by UCC representative for protection from corrosive agents.

3. a) Reassembly of compressor #2 and #3 by others;

- b) Compressor #1 is intended to be scrapped by UCC.

4. Schedule

Contract Award	2 - 19 - 88
Cleaning work starts on comp. #3	3 - 1 - 88
All comp. 3 parts cleaned	3 - 14 - 88
Reassembly complete, ready for shipment to Texas	3 - 21 - 88
Arrival comp. #3 @ Texas site	4 - 1 - 88

Scire

Vick, Fred, Jim, Chuck, Dave
IN Somerset

FEB 8 '88

A. COMPRESSORS

1. DISMANTLE COMPRESSORS

- a) BEGIN WITH #3, THEN #2 FINALLY #1
- b) DISMANTLE UNDER TECHNICAL DIRECTION OF LARRY KUNE CONTRACTED TO UNION CARBIDE OR A UCC REPRESENTATIVE.

2. COMPRESSORS TO BE DECONTAMINATED / CLEANED TO MEET THE FOLLOWING = Cleaned until by IT any detectable H₂ cleaning procedure will be repeating.

- a) Critical & Sensitive Surfaces TO BE IDENTIFIED BY UCC REP. FOR PROTECTION FROM CORROSION AGENTS

3 a) Reassembly of compressors 2 & 3 to be done by others.

- a) Compressor #1 TO BE SCRAPPED BY UCC INVESTMENT RECOVERY.

B. PROCESS PIPING & EQUIPMENT

1. a) Process Piping shall be removed as described in P. 2.3 of the 11/87 proposal CO 5281

2. Steam Pipe removal shall be as described in Par. 2.4 of the 11/87 proposal CO 5281

2/

3A.) The vac. pump & Driers inside the Plant will be disconnected from the system disassembled and disposed. No mercury cleaning other than an external vacuum will be performed.

C. Floor, Walls Ceiling and Roof.

1. Upon removal of the old product lines and asbestos pipe, the entire Bldg. will be internally vacuumed using a Hg. Vacuum UNIT.
2. The Roof will be vacuumed using a Hg vacuum UNIT.

D. DISPOSAL

1. RINSEATE FROM compressor cleaning will be staged in 55 gallon drums. UNION CARBIDE AND IT SHALL ADVISE ON DISPOSAL ALTERNATIVES, TAKING INTO CONSIDERATION WASTE MINIMIZATION AND LAND DISPOSAL RESTRICTIONS.
2. Solid waste shall be disposed of at a site agreeable to UNION CARBIDE AND ITC.



INVOICE

REMIT TO:
INTERNATIONAL TECHNOLOGY
CORPORATION
Department L515P
Pittsburgh, PA 15204

Union Carbide

INVOICE NO.: I01546
DATE: 3/22/88
PROJECT NO.: E803101
CUSTOMER NO.: 305281
CLIENT P.O. NO.: 3/15/88

Attn: Tom Hernon

TERMS: NET 10 DAYS
A SERVICE CHARGE OF 1 1/2% PER MONTH WILL BE MADE ON INVOICES 30 DAYS OR OLDER.

Wipe samples received 3/15/88

4 Mercury

\$150.00

\$600.00



INTERNATIONAL
TECHNOLOGY
CORPORATION

Union Carbide Corporation
Southwood Avenue
Linden, N. J. 07036
Attn: Mr. Scott Hickey
N. J. Lab Certification ID #12064

Job #: 305281
Date: 3/22/88
Auth.: 3/15/88
Lot #: E803101
Invoice #: I01546
Sample Date: 3/15/88

REPORT OF ANALYSIS

<u>Sample #</u>	<u>Sample Identification</u>	<u>Mercury (mg/Wipe)</u>
E803101-01	WP 8 Compressor #3 1st Stage Valve Cover	8.2
E803101-02	WP 9 Compressor #3 2nd Stage Valve Cover	2.0
E803101-03	WP 10 Compressor #3 4th Stage Cylinder	2.2
E803101-04	WP 11 Field Blank	0.0004



INVOICE

REMIT TO:
INTERNATIONAL TECHNOLOGY
CORPORATION
Department L515P
Pittsburgh, PA 15264

Union Carbide

Attn: Tom Daniels

INVOICE NO.: I01534
DATE: 3/21/88
PROJECT NO.: E803086
CUSTOMER NO.: 305281
CLIENT P.O. NO.: 3/11/88

TERMS: NET 10 DAYS
A SERVICE CHARGE OF 1 1/2% PER MONTH WILL BE MADE ON INVOICES 30 DAYS OR OLDER.

Wipe samples received 3/11/88

7 Mercury

24 Hour TAT

\$150.00

\$1,050.00



INTERNATIONAL
TECHNOLOGY
CORPORATION

Union Carbide Corporation
Southwood Avenue
Linden, N. J. 07036
Attn: Mr. Scott Hickes
N. J. Lab Certification ID #12064

Job #: 305281
Date: 3/21/88
Auth.: 3/11/88
Lot #: E803086
Invoice #: I01534
Sample Date: 3/11/88

REPORT OF ANALYSIS

COMPRESSOR #3

<u>Sample #</u>	<u>Sample Identification</u>	<u>Mercury (mg/Wipe)</u>
E803086-01	D1834 Piston Post Clean	0.090
E803086-02	D1835 1st Stage Suction Valve Post Clean	0.26
E803086-03	D1836 1st Stage Valve Covers Post Clean	81
E803086-04	D1837 1st Stage Cylinder Preclean	3.0
E803086-05	D1838 2nd Stage Cylinder Preclean	0.068
E803086-06	D1839 Cross Head Preclean	0.19
E803086-07	D1840 Field Blank	<0.0002

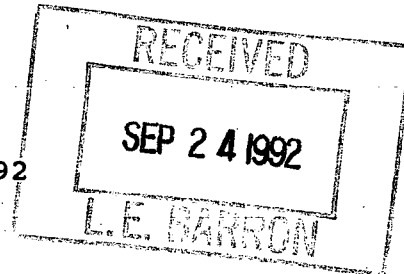
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PRAXAIR, INC.
Law Department
39 Old Ridgebury Road
Danbury, CT 06810-5113

Richard G. Tisch
Group Counsel
Safety, Health & Environment

Phone: (203) 794-6584
Fax: (203) 794-7057

September 23, 1992



VIA OVERNIGHT MAIL

Suzanne Blanchard, Esq.
Cohen, Shapiro, Polisher, Shiekman
& Cohen
Princeton Pike Corporate Center
1009 Lenox Drive - Bldg. 4
Lawrenceville, NJ 08648

Re: Linden ECRA - Documents Regarding
Sale to Ultra Pure

Dear Suzanne:

I have enclosed copies of various documents regarding the Linden Hydrogen facility sale to Ultra Pure Compressed Gases, Inc. These should be of assistance in your review of assets transferred pursuant to that sale.

Very truly yours,

Richard G. Tisch

A handwritten signature in dark ink, appearing to read "Richard G. Tisch", written over the typed name.

RGT/jm
Enclosures

cc: L. E. Barron (w/o enc.)
N. A. DiFranco (w/o enc.)

need - Property Register pre-Agreement
File
LINDEN, N.J.

ASSET PURCHASE AND SALE AGREEMENT

THIS AGREEMENT, made as of the 31st day of August, 1990, by, between and among UNION CARBIDE INDUSTRIAL GASES INC., a Delaware corporation having offices at 39 Old Ridgebury Road, Danbury, Connecticut 06817-0001 (hereinafter called "Seller"), ULTRA PURE COMPRESSED GASES, INC., a New Jersey corporation having offices at 97 Turnpike Road, West Borough, Massachusetts 01581 (hereinafter called "Purchaser") and LINDE GASES OF THE MID-ATLANTIC, INC., a New Jersey corporation having offices at 308 Harper Drive, Moorestown, New Jersey 08057 (hereinafter called "LGMA").

W I T N E S S E T H:

WHEREAS, Seller has been engaged, at its hydrogen plant located along Linde Road in the city of Linden, County of Union, State of New Jersey (hereinafter called the "Premises"), in the business of compressing, purifying, repackaging and selling, at wholesale and retail, certain gases, including but not limited to hydrogen, nitrogen, argon and oxygen and mixtures containing such gases; and

WHEREAS, Seller has announced its plans to terminate its use of the Premises;

WHEREAS, Purchaser desires to commence a hydrogen compressing, purifying, repacking and selling business from the Premises;

WHEREAS, Seller desires to sell to Purchaser, and Purchaser desires to purchase from Seller, certain assets used by Seller in its conduct of business at the Premises;

WHEREAS, Seller, LGMA and Purchaser desire to enter into certain product supply, tank lease and other agreements effective upon the Closing (as hereinafter defined);

NOW, THEREFORE, for and in consideration of the mutual promises and undertakings hereinafter set forth, the parties hereto covenant and agree as follows:

1. Purchase and Sale of Assets.

(a) Seller hereby agrees to sell, assign, transfer and deliver to Purchaser and Purchaser hereby agrees to purchase and accept from Seller, the assets identified on Exhibit A attached hereto (the "Purchased Assets"). No other assets of Seller are being sold hereby.

2. Purchase Price.

(a) The purchase price for the Purchased Assets shall be Two Hundred Thousand Dollars (\$200,000.00) payable in 36 monthly installments of interest (accrued at the rate of twelve percent (12%) per annum) and principal, with the first such installment becoming due one month after the date of the Closing. Purchaser shall evidence its obligation to make such payments by executing and delivering at the Closing a Promissory Note (hereinafter called the "Note"), dated the

Closing date and substantially in the form as set forth in Exhibit B attached hereto.

(b) The Note shall be secured by a first priority security interest in the Purchased Assets, and Purchaser's interest as tenant under a lease for the Premises. The security interest shall be granted to Seller pursuant to a Security Agreement to be executed and delivered by Seller and Purchaser at the Closing (hereinafter called the "Security Agreement"), substantially in the form of the agreement attached hereto as Exhibit C.

(c) Purchaser shall be responsible for and shall pay all sales, use and other transfer taxes due by reason of the sale of the Purchased Assets.

3. The Lease.

(a) As successor in interest to Union Carbide Corporation, Seller is the tenant of the Premises under the Ground Lease dated May 1, 1987, between LCP Chemicals & Plastics, Inc., as landlord, and Union Carbide Corporation, as tenant, as amended by letter agreement dated April 11, 1989 (hereinafter called the "Lease"). The Hanlin Group, Inc. (hereinafter called "Landlord"), is the successor in interest to LCP Chemicals & Plastics, Inc. A copy of the Lease has been delivered to Purchaser.

(b) At the Closing, and as a condition thereof, (i) Purchaser and Landlord shall enter into a new lease for the Premises (the "New Lease") effective as of the Closing, and (ii) Seller and Landlord shall terminate the Lease, effective as of the Closing. The New Lease and all documents relating to the termination of the Lease shall be prepared, and Landlord's execution thereof obtained, at Purchaser's own expense. The documents terminating the Lease shall be satisfactory, both in form and substance, to Seller.

(c) Prior to the Closing, Purchaser at its own expense shall also obtain a consent of Landlord (hereinafter called the "Consent of Landlord") to the security interest afforded by the Security Agreement in the Purchased Assets and Purchaser's interest as tenant under the New Lease. The form and substance of the Consent of Landlord shall be subject to Seller's prior approval, and shall contain the agreement of Landlord to accept Seller as the tenant under the New Lease if Seller shall foreclose its security interest and obtain the right to possession of the Premises (subject to the New Lease), provided that if Seller elects to so obtain possession of the Premises Seller shall assume the obligations of Purchaser under the New Lease.

4. Intentionally Deleted.

Purchaser if such work interferes with Purchaser's conduct of its business at the Premises.

6. Condition of the Premises and the Purchased Assets.

(a) Purchaser has inspected the Premises and the Purchased Assets and agrees to accept the same "as is" on the date of the Closing, without reliance upon any representations, warranties or guarantees, either express or implied, of Seller, its employees or agents, as to the condition or state of repair of the Premises and the Purchased Assets.

(b) SELLER MAKES NO REPRESENTATIONS, WARRANTIES OR GUARANTEES, EITHER EXPRESS OR IMPLIED, AS TO THE PREMISES OR THE PURCHASED ASSETS. NO WARRANTY OR GUARANTEE SHALL BE IMPLIED OR OTHERWISE CREATED UNDER THE UNIFORM COMMERCIAL CODE (OTHER THAN THE WARRANTY OF TITLE AS PROVIDED UNDER THE UNIFORM COMMERCIAL CODE), OR OTHERWISE AS TO ANY PURCHASED ASSETS, THE PREMISES OR ANY EQUIPMENT OR FIXTURES LOCATED UPON THE PREMISES, INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

7. Title to the Certain Assets.

(a) Purchaser represents that it has received and has read a copy of the Lease. Purchaser acknowledges that, pursuant to Paragraph 17 of the Lease, upon the expiration or other termination of the Lease title to certain assets previously used by Seller in its conduct of business from the

Premises vests in Landlord. If Purchaser desires to use such assets, it will make appropriate arrangements with Landlord (in the New Lease or otherwise).

(b) At the Closing, Seller and Purchaser shall execute and deliver in duplicate counterparts a bill of sale (hereinafter called the "Bill of Sale"), substantially in the form as set forth in Exhibit D attached hereto. At the Closing, Seller shall transfer to Purchaser good and marketable title to the Purchased Assets, free and clear of all mortgages, liens and security interests.

8. Risk of Loss.

The risk of damage to or destruction of the Purchased Assets prior to Closing is assumed by Purchaser. If, prior to Closing, the Premises and/or the Purchased Assets suffer any damage or destruction, Purchaser shall not be entitled to any diminution of the purchase price or any delay in Closing, and Purchaser shall remain liable to close the purchase and sale hereunder for the same price and otherwise in accordance with the provisions of this Agreement.

9. Disclaimers and Acknowledgments.

Purchaser intends to use the Premises and the Purchased Assets for the storage, filling and transfilling of hydrogen and nitrogen and acknowledges that it is sufficiently knowledgeable and sophisticated to evaluate and assess the condition, state of repair and production capacity of the

and that the price shall be adjusted, by an equal percentage, and at the same effective time, as any change in the price of liquid hydrogen delivered to Purchaser by Seller pursuant to the Bulk Product Supply Agreement. In addition, Seller and LGMA shall receive a volume discount equal to \$.15 per 100 cubic feet, for all purchases pursuant to the Tube Trailer Product Supply Agreement in every month in which the aggregate purchases pursuant to the Tube Trailer Product Supply Agreement by Seller and LGMA during that month equal or exceed 1 million cubic feet.

15. Cylinder Maintenance.

At the Closing, Purchaser and LGMA shall enter into a Cylinder Maintenance Agreement (the "Cylinder Maintenance Agreement"), substantially in the form as Exhibit K attached hereto, pursuant to which Purchaser shall provide maintenance services for a period of five (5) years after the Closing for hydrogen cylinders owned by LGMA.

16. Closing.

(a) The consummation of the purchase and sale of the Purchased Assets pursuant to this Agreement (the "Closing"), shall take place on or before August 31, 1990 at 11:00 a.m. in the offices of Seller.

(b) Seller shall deliver or cause to be delivered to Purchaser at the Closing:

(i) Physical possession at the Premises of the Purchased Assets, and the Nitrogen Tank and the Hydrogen Tank;

(ii) the Bill of Sale, duly executed by Seller;

(iii) the Security Agreement, duly executed by Seller;

(iv) the Tank Lease Agreement, duly executed by Seller;

(v) the Tube Trailer Product Supply Agreement, duly executed by Seller;

(vi) the Bulk Product Supply Agreement, duly executed by Seller; and

(vii) documents terminating the lease in accordance with Section 3(b) hereof, duly executed by Seller.

(c) Purchaser shall deliver or cause to be delivered to Seller and/or LGMA at the Closing:

(i) the Bill of Sale, duly executed by Purchaser;

(ii) the Note and the Security Agreement, together with UCC-1 Financing Statements (including fixture filings) duly executed by Purchaser;

(iii) evidence of payment or provision for payment for any sales, use, or other transfer taxes due by reason of the sale of the Purchased Assets, or an exemption therefrom;

(iv) documents terminating the Lease in accordance with Section 3(b) hereof, duly executed by Landlord, and the New Lease duly executed by Purchaser and Landlord together with the Consent of Landlord duly executed by Landlord;

(v) copies of permits issued to Purchaser for the conduct of the Business;

(vi) the Tank Lease Agreement, the Bulk Product Supply Agreement, the Cylinder Product Supply Agreement, the Tube Trailer Product Supply Agreement and the Cylinder Maintenance Agreement, each duly executed by Purchaser;

(viii) the assignment and assumption agreement referred to in Section 16(d)(ii) hereof, duly executed by Purchaser;

(ix) a Good Standing Certificate for Purchaser issued by the Secretary of State of the State of New Jersey and dated not more than fifteen (15) days prior to the Closing;

(x) a Certificate of an Officer of Purchaser, certifying the adoption of resolutions by its Board of Directors approving the execution and delivery of this Agreement and the transactions to be entered into by Purchaser pursuant to this Agreement;

(xi) a certificate of insurance, as required pursuant to the Security Agreement; and

(xii) such other documents, instruments and agreements as Seller shall reasonably request.

(d) LGMA shall deliver or cause to be delivered to Purchaser at the Closing:

(i) the Cylinder Product Supply Agreement; duly executed by LGMA;

(ii) assignments of the Distributor Agreements to Purchaser with respect to industrial hydrogen delivered in cylinders from the Premises, and copies of LGMA's notice to Distributors effecting such assignments and permitting Purchaser to fill LGMA cylinders for such Distributors during the term of the Cylinder Product Supply Agreement;

(iii) the Tube Trailer Product Supply Agreement and the Cylinder Maintenance Agreement, each duly executed by LGMA; and

(iv) such other documents, instruments and agreements as Purchaser shall reasonably request.

17. Default.

Purchaser and Seller and LGMA (Seller and LGMA shall be considered together as one party for the purposes of this Section 17) acknowledge that in the event of a default by a party hereunder the damages to the non-defaulting party will be impossible to calculate. Therefore, if a party fails to timely perform any of its obligations hereunder and upon ten (10)

INDEX OF EXHIBITS

Exhibit A	Purchased Assets
Exhibit B	Promissory Note
Exhibit C	Security Agreement
Exhibit D	Bill of Sale
Exhibit E	Permits
Exhibit F	Tank Lease Agreement
Exhibit G	Bulk Product Supply Agreement
Exhibit H	The Customers
Exhibit I	Cylinder Product Supply Agreement
Exhibit J	Tube Trailer Product Supply Agreement
Exhibit K	Cylinder Maintenance Agreement
Exhibit L	Benchmarking

EXHIBIT F

UNION CARBIDE INDUSTRIAL GASES INC.

TANK LEASE AGREEMENT

LEASE AGREEMENT (this "Agreement") dated as of the ____ day of August, 1990, between UNION CARBIDE INDUSTRIAL GASES INC., a Delaware corporation having a place of business at 39 Old Ridgebury Road, Danbury, Connecticut 06817-0001 (hereinafter called "Lessor"), and ULTRA PURE COMPRESSED GASES, INC., a New Jersey corporation having a place of business at 97 Turnpike Road, West Borough, Massachusetts 01581 (hereinafter called "Lessee").

W I T N E S S E T H:

WHEREAS, Lessor desires to lease bulk gas storage tanks to Lessee and Lessee desires to lease such tanks from Lessor, upon the terms and conditions set forth below;

NOW, THEREFORE, for and in consideration of the mutual promises and undertakings hereinafter set forth, the parties hereto covenant and agree as follows:

1. Lease of Tanks.

Lessor hereby agrees to lease to Lessee, and Lessee hereby agrees to lease from Lessor, upon the terms and conditions hereinafter stated, the quantity and styles of Lessor's bulk gas storage tanks described in Exhibit A attached

hereto, along with all accessories thereto (such tanks together with their accessories being hereinafter collectively called the "Leased Tanks" and individually called a "Leased Tank").

2. Prices and Terms.

(a) Lessee agrees to pay Lessor, for use of each Leased Tank, a monthly rental at the applicable Lease Rate (hereinafter called "Lease Rate") set forth on Exhibit A hereto. Not less than sixty (60) days prior to the end of the initial and any subsequent annual renewal term, Lessor shall have the right to increase the Lease Rates, effective as of the end of the then current term, by giving notice of such increase to Lessee.

(b) Lessor shall invoice Lessee each month for the amounts due under paragraph (a) of this Section 2. Terms of payment are net cash ten (10) days following date of invoice. Lessee shall pay to Lessor on demand a monthly late charge on any delinquent balance at the lesser of twelve percent (12%) per annum or the highest interest rate permitted by applicable law. The obligation of Lessee to pay hereunder shall be unconditional.

(c) In addition to payments due under paragraphs (a) and (b) of this Section 2, Lessee shall pay the amount of all federal, State, municipal and other governmental taxes, assessments, excises, fees and other charges (except taxes on or measured by net income and corporate franchise taxes)

levied or based on such payments or upon this Agreement or upon the Leased Tanks or their use, if such are charged directly to Lessee, or shall reimburse Lessor (within ten days following receipt of Lessor's invoice for same) for payment of such amounts if the same are charged against and paid by Lessor, provided, however, that Lessee shall not be required to reimburse Lessor for interest and penalties, if any, arising from Lessor's nonpayment or late payment of any of the foregoing amounts charged directly to Lessor.

3. Term.

This Agreement is effective as of the date hereof and, unless sooner terminated as hereinafter provided, shall remain in effect for three (3) years and shall continue thereafter from year to year. Either party may terminate this Agreement at the end of the then-current term upon not less than ninety (90) days prior written notice to the other party.

4. Location.

(a) The Leased Tanks are located and installed at Lessee's premises located along Linde Road, Linden, New Jersey.

(b) At all times during the term of this Agreement, Lessee shall:

(i) provide a suitable site for each Leased Tank with access by road for tractor-trailer delivery;

(ii) maintain a suitable foundation for each Leased Tank;

hydrogen gas shall be permitted access to the hydrogen storage tank subject to the requirements set forth in Section 13 below.

7. Removal or Replacement.

Lessee shall at all times during the term of this Agreement keep the Leased Tanks at the premises described in Section 4 above or such other place as is authorized in writing by Lessor and shall not itself move or remove nor permit a Leased Tank to be moved or removed without the prior written consent of Lessor. Any relocation or replacement of a Leased Tank during the term of this Agreement at the request of Lessee shall be at the Lessee's sole expense and shall be under such conditions as Lessor shall prescribe in connection with the authorization referred to above.

8. Title.

(a) Title to the Leased Tanks shall remain in Lessor at all times during the term of this Agreement and Lessee shall at all times protect and defend, at its own cost and expense, the title of Lessor from and against all claims, liens and legal processes of creditors of Lessee and keep the Leased Tanks free and clear of all such claims, liens, encumbrances and processes, and not do or permit anything to be done which will jeopardize Lessor's title or rights in and to the Leased Tanks. Without limiting the generality of the foregoing, Lessee shall not remove or obliterate any notices or marks of

ownership or identification which Lessor may have placed on the Leased Tanks or any components thereof.

(b) The Leased Tanks shall remain personal property and not be deemed otherwise by reason of being attached to real property. ~~From time to time, Lessee shall execute financing~~ statements or any other documents reasonably requested by Lessor to protect Lessor's title to the Leased Tanks.

9. Loss or Damage.

(a) Each Leased Tank and all components thereof, at all times from the date hereof until redelivery to Lessor hereunder, shall be held at the sole risk of Lessee with respect to any loss or failure of or damage to the Leased Tank or its components or any portion thereof from any cause whatsoever, except with respect to any loss, failure or damage (1) caused by the Lessor in maintaining the Leased Tank; (2) caused by the sole negligence of Lessor, or (3) caused by a breach by Lessor of the warranty provisions set forth in Section 10 hereof.

(b) If a Leased Tank or any part thereof fails or is damaged or destroyed and Lessee is responsible as provided in paragraph (a) of this Section, Lessee shall pay to Lessor the cost of repairing or replacing such Leased Tank. For purposes of this Agreement, the replacement cost of each Leased Tank is set forth on Exhibit A hereto.

EXHIBIT A

LEASED TANKS

<u>Quantity</u>	<u>Description</u>	<u>Lease Rate Per Month</u>	<u>Replacement Cost</u>
1	TLH 18150 liquid hydrogen storage tank - W1014	\$100.00	175,000
1	TM 500 nitrogen storage tank and Pump - T539-6817, with nitrogen loss upgrade and solenoid valves (part of tank)	\$50.00	35,000

BILL OF SALE

KNOW ALL PERSONS BY THESE PRESENTS, that UNION CARBIDE INDUSTRIAL GASES INC., a Delaware corporation (hereinafter called "Seller"), for and in consideration of Ten Dollars and other valuable consideration, cash in hand paid by ULTRA PURE COMPRESSED GASES, INC., a New Jersey corporation (hereinafter called "Purchaser"), receipt whereof is hereby acknowledged, does, subject to the terms and conditions hereinafter set out, hereby bargain, sell, transfer, assign, set over and deliver to Purchaser, the assets described on Exhibit A attached hereto (the "Purchased Assets"), which assets are located upon Seller's former hydrogen facility along Linde Road in Linden, New Jersey.

Purchaser accepts the Purchased Assets "as is, where is."

It is expressly understood and agreed that Seller makes no warranties or guarantees, either express or implied, as to the Purchased Assets, except that they are free and clear of all mortgages, liens and security interests. NO WARRANTY OR GUARANTY SHALL BE IMPLIED OR OTHERWISE CREATED UNDER THE UNIFORM COMMERCIAL CODE (OTHER THAN THE WARRANTY OF TITLE AS PROVIDED UNDER THE UNIFORM COMMERCIAL CODE), OR OTHERWISE, INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

Purchaser accepts all risks and assumes all liabilities in the possession, operation and use of the Purchased Assets, and shall indemnify and hold harmless Seller from all claims, damages, losses and liabilities, including reasonable attorneys' fees, due to the use of the Purchased Assets by Purchaser on or after the date hereof or any personal injury, death and property damage or destruction arising on or after the date hereof out of the possession, operation or use of the Purchased Assets.

IN WITNESS WHEREOF, the parties have executed this instrument this 31st day of August, 1990.

UNION CARBIDE INDUSTRIAL
GASES INC. (SELLER)

By Sally Ann Savoia
S. A. Savoia,
Liquid Business Manager

ULTRA PURE COMPRESSED GASES,
INC. (PURCHASER)

By Frank H. Shin
Title President

EXHIBIT A

PURCHASED ASSETS

TRKR Loading Center
Electrical Upgrade
Switchgear
Switchgear
Power Wiring
Power Wiring
Motor Starter
HYD Compressor M 46068 Comp
HYD Compressor M 46068 Inst
KD-30 Pump 87-0442
Liquid HYD Pump Inst 84154991
Liquid HYD Pump Inst/Pipe, VAP
Regulated Relief Valve
Cooling Tower
VIP Piping
HP Vaporizers 4 2 HEX 2 WO
Solenoid Valves
Overhead Crane
Oxy Montor Anlze
Hi Purity Most Anlze
Gas Chromatograph
Shutoff System
Collar Removal Tool
Hydrotest Pump 18653
Valving Machine Galiso 508212
Cylinder Drier Magna Fab
Oil Remov Syst-Balston 4 Units
Surge Tank For Norwalk Compr
Hydrotest Jacket, Cons, Air HS
Meco Analyzer Model W
Teledyne Model 316
Hewlett Packard Integrator
Beckman Hydrocn Analyz M 400
Gow Mac Model 20-150
Spectrum Amplfr 1021A W Fltr
Power Line Voltage Stabilizer

EXHIBIT A

PURCHASED ASSETS

TRKR Loading Center
Electrical Upgrade
Switchgear
Switchgear
Power Wiring
Power Wiring
Motor Starter
HYD Compressor M 46068 Comp
HYD Compressor M 46068 Inst
KD-30 Pump 87-0442
Liquid HYD Pump Inst 84154991
Liquid HYD Pump Inst/Pipe, VAP
Regulated Relief Valve
Cooling Tower
VIP Piping
HP Vaporizers 4 2 HEX 2 WO
Solenoid Valves
Overhead Crane
Oxy Montor AnlZR
Hi Purity Most AnlZR
Gas Chromatograph
Shutoff System
Collar Removal Tool
Hydrotest Pump 18653
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Oil Remov Syst-Balston 4 Units
Surge Tank For Norwalk Compr
Hydrotest Jacket, Cons, Air HS
Meco Analyzer Model W
Teledyne Model 316
Hewlett Packard Integrator
Beckman Hydrcbn Analyz M 400
Gow Mac Model 20-150
Spectrum Amplfr 1021A W Fltr
Power Line Voltage Stabilizer

6/1/92

Post-It™ brand fax transmittal memo 7671		# of pages > 1
To	Ray Kershaw	
From	M E Herr	
Co.	Mountain	
Co.	DBY	
Dept.		
Phone #		
Fax #	609-722-5554	
Fax #	203-794-6056	



PACKAGED
GASES
NATIONAL OFFICE

INTERNAL
CORRESPONDENCE

file

NATIONAL PACKAGED GASES OFFICE
P.O. BOX 6744, 200 COTTONTAIL LANE
SOMERSET, NJ 08875-6744
TEL.: 201-271-2600
FAX: 201-271-2699

To L. E. Barron

Date November 22, 1991

Originating Dept. Environmental Affairs

Copy to

Subject Linden NJ-ECRA

+ lessee

The attached letter from Frank Finn, owner of Ultra Pure Gases, the current operator of the Linden site, indicates that the Active Water Jet Company is not associated with or has any arrangements with Ultra Pure Gases. Apparently LCP has allowed Active Water Jet to operate on the Linden site. The problem that exists is that the activities of Active Water Jet may conflict with the ECRA cleanup of Linden and possibly contaminate the same areas we are trying to decontaminate.

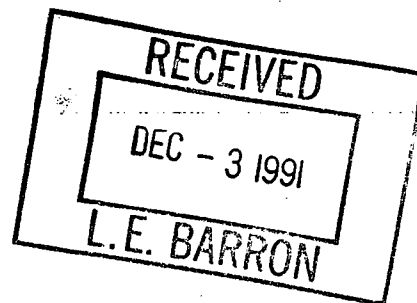
I believe it necessary for Business Management or SHEA to contact LCP to advise them of this situation and request cessation of Active Water Jet activities.

Let's discuss this in more detail.

N. A. DiFranco
N. A. DiFranco

NAD/lmk
Attachment

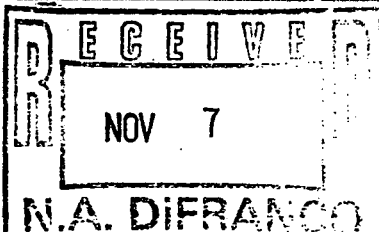
*Sub-lease?
call NAD*



*ECRA "Case + desist doing if you unless an NPDES is shut'd"
F. FINN "I'm getting an NPDES" OK.
Act. Water Jet, on prop 5 parcel h acc of F. Finn.
(washing equip & water jets, discharges -> rd). INTERFERES ECRA
CL-up!
FINN: ENO (BENO) TUN DIDOR = Met Mgr; details re: Active Khan LCP.*



QUALITY PRODUCTS-SERVICE



FIBA Compressed Gas Equipment
P. O. Box 897, 97 Turnpike Road
Westboro, MA 01581-0897
TEL (508) 366-8361 FAX (508) 366-1915

November 5, 1991

Union Carbide Industrial Gases
National Packaged Gases Office
P.O. Box 6744, 200 Cottontail Ln.
Somerset, New Jersey 08875-6744

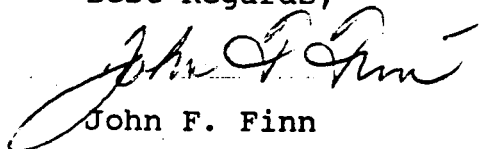
ATTN: W.A. DiFranco

Dear Mr. DiFranco,

I appreciate your concerns on the Linden site. We now do understand we must file a permit for water discharge. We will file for this permit immediately. I must point out the operations currently in existence is the same as it was under UCIG control. Our operations include testing of cylinders and hydrogen pumping.

2 — In regards to Active Water Jet Company. This business was on the premises when UCIG operated the facility. Ultra Pure Gases has no agreement with Active Water Jet. Active Water Jet has been on this site long before Ultra Pure Gases. We have assumed there was an arrangement in place between LCP/UCIG and Active Water Jet. If this is not the case, I suggest you contact L.C.P. in regards to Active Water Jet. Ultra Pure Gases has no control or relationship with Active Water Jet. As soon as our permit for water disposal is in place you will be contacted. Please give me a call if I can be of help in any other way.

Best Regards,


John F. Finn

Part of Sales Agreement

Closing date and substantially in the form as set forth in Exhibit B attached hereto.

(b) The Note shall be secured by a first priority security interest in the Purchased Assets, and Purchaser's interest as tenant under a lease for the Premises. The security interest shall be granted to Seller pursuant to a Security Agreement to be executed and delivered by Seller and Purchaser at the Closing (hereinafter called the "Security Agreement"), substantially in the form of the agreement attached hereto as Exhibit C.

(c) Purchaser shall be responsible for and shall pay all sales, use and other transfer taxes due by reason of the sale of the Purchased Assets.

3. The Lease.

(a) As successor in interest to Union Carbide Corporation, Seller is the tenant of the Premises under the Ground Lease dated May 1, 1987, between LCP Chemicals & Plastics, Inc., as landlord, and Union Carbide Corporation, as tenant, as amended by letter agreement dated April 11, 1989 (hereinafter called the "Lease"). The Hanlin Group, Inc. (hereinafter called "Landlord"), is the successor in interest to LCP Chemicals & Plastics, Inc. A copy of the Lease has been delivered to Purchaser.

HARLIN

(b) At the Closing, and as a condition thereof, (i) Purchaser and Landlord shall enter into a new lease for the Premises (the "New Lease") effective as of the Closing, and (ii) Seller and Landlord shall terminate the Lease, effective as of the Closing. The New Lease and all documents relating to the termination of the Lease shall be prepared, and Landlord's execution thereof obtained, at Purchaser's own expense. The documents terminating the Lease shall be satisfactory, both in form and substance, to Seller.

(c) Prior to the Closing, Purchaser at its own expense shall also obtain a consent of Landlord (hereinafter called the "Consent of Landlord") to the security interest afforded by the Security Agreement in the Purchased Assets and Purchaser's interest as tenant under the New Lease. The form and substance of the Consent of Landlord shall be subject to Seller's prior approval, and shall contain the agreement of Landlord to accept Seller as the tenant under the New Lease if Seller shall foreclose its security interest and obtain the right to possession of the Premises (subject to the New Lease), provided that if Seller elects to so obtain possession of the Premises Seller shall assume the obligations of Purchaser under the New Lease.

4. Intentionally Deleted.

5. Environmental Matters.

(a) If it has not already done so, within five (5) days after the execution and delivery of this Agreement, Seller shall, in compliance with the New Jersey Environmental Cleanup Responsibility Act (hereinafter called "ECRA"), notify the appropriate authorities of its decision to cease its operations at the Premises. Prior to the Closing, and as a condition thereof, Seller shall execute and deliver to the New Jersey Department of Environmental Protection any consent orders or other agreements including financial assurances, as may be required under ECRA.

(b) Seller shall, at its own expense, engage an environmental consulting firm reasonably acceptable to Purchaser (hereinafter called the "Consultant"), to do a benchmarking survey of the Premises prior to the Closing. Purchaser agrees that International Technology Corp. is acceptable to it to act as the Consultant and that the benchmarking survey shall be conducted as provided in Exhibit L hereto.

(c) Seller and Purchaser agree that the results of the benchmarking survey conducted by the Consultant shall establish a benchmark for the condition of the Premises at the time of the Closing. Purchaser shall indemnify and hold harmless Seller and its affiliates from and against all claims, losses, damages, costs or expenses (including, without

limitation, attorneys fees) for environmental matters which arise out of the use or occupation of the Premises after the Closing (except to the extent the same arise as a result of action by Seller or its representatives). If a disagreement arises between the parties as to whether Purchaser's indemnification pursuant to this Section 5(c) applies in a particular instance, the dispute shall be referred to the Consultant, and the benchmarking survey shall serve as a basis for the Consultant to determine whether Purchaser has an indemnification obligation in such instance. Any such determination by the Consultant shall be final and binding upon both Seller and Purchaser.

(d) Subject to the provisions of Section 5(c) above, after the Closing Seller at its expense shall comply with the provisions of ECRA applicable as a result of its decision to shutdown its operations at the Premises and to terminate the Lease (including, without limitation, obtaining approval for a sampling plan and carrying out any remedial work required by the State of New Jersey as a result of such sampling).

✓ (e) After the Closing, Seller and its contractors shall have the right to enter the Premises at all times to perform any work required pursuant to ECRA. Purchaser shall cooperate to permit the performance of said work and shall not cause or permit any conditions to arise upon the Premises which delay, hinder or prevent Seller's compliance with its ECRA obligations with respect to the Premises. Seller shall not be liable to

Purchaser if such work interferes with Purchaser's conduct of its business at the Premises.

6. Condition of the Premises and the Purchased Assets.

(a) Purchaser has inspected the Premises and the Purchased Assets and agrees to accept the same "as is" on the date of the Closing, without reliance upon any representations, warranties or guarantees, either express or implied, of Seller, its employees or agents, as to the condition or state of repair of the Premises and the Purchased Assets.

(b) SELLER MAKES NO REPRESENTATIONS, WARRANTIES OR GUARANTEES, EITHER EXPRESS OR IMPLIED, AS TO THE PREMISES OR THE PURCHASED ASSETS. NO WARRANTY OR GUARANTEE SHALL BE IMPLIED OR OTHERWISE CREATED UNDER THE UNIFORM COMMERCIAL CODE (OTHER THAN THE WARRANTY OF TITLE AS PROVIDED UNDER THE UNIFORM COMMERCIAL CODE), OR OTHERWISE AS TO ANY PURCHASED ASSETS, THE PREMISES OR ANY EQUIPMENT OR FIXTURES LOCATED UPON THE PREMISES, INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

7. Title to the Certain Assets.

(a) Purchaser represents that it has received and has read a copy of the Lease. Purchaser acknowledges that, pursuant to Paragraph 17 of the Lease, upon the expiration or other termination of the Lease title to certain assets previously used by Seller in its conduct of business from the

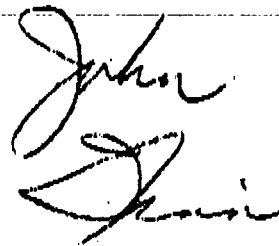
NOV 13 1989 12:00 P.3

LCP CHEMICALS — NEW JERSEY

A Division of Hanlin Group, Inc.
P.O. Box 484 • Linden, NJ 07036 • (201) 862-1688

November 2, 1989

FIBA Leasing Company
97 Turnpike Road
West Borough, MA 01581
ATTN: Mr. Frank Finn
Chief Executive Officer



Dear Mr. Finn:

I would like to take this opportunity to thank you for the opportunity to meet you and Tom Sabino yesterday at lunch.

To recap the major points we discussed.

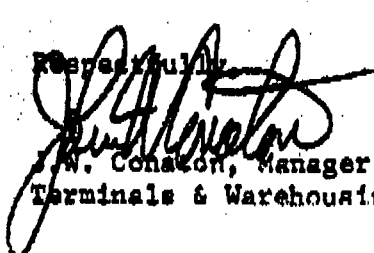
1. LCP/Hanlin is agreeable in principal to the concept of a new company being formed and taking over the existing lease or negotiating a new longer term lease for the Linde facility.
2. LCP/Hanlin is very concerned about environmental issues. Prior to any actions being taken we demand the right to review your plans and if we perceive them to have a negative/adverse impact on LCP/Hanlin, we will exercise veto powers.

This sounds very strong, and it is. We have strong environmental concerns as a matter of corporate policy. This is not to say we will not work with you in any way we can. Which leads to the next point.

3. We would appreciate a letter from Carbide/Linde acknowledging the proposed relationship and giving us permission to proceed. Linde has been a tenant for a long time and we respect our relationship. Because of this relationship and the fact that our corporate mission statement demands the highest professional and ethical conduct, we will need this to proceed.

Again, thank you for the opportunity for the meeting, and looking forward to a positive future.

Respectfully,



J.W. Conaton, Manager
Terminals & Warehousing

JWC/kc

LEASE TERMINATION AGREEMENT

AGREEMENT made as of this 31ST day of August, 1990,
by and between LCP Chemicals NJ, Division of Hanlin Group,
Inc. ("LCP"), Union Carbide Industrial Gases Inc. ("UCIG"), and
Ultra Pure Compressed Gases, Inc. ("UPGAS").

WHEREAS, UCIG is the tenant at certain premises located along
Linde Road in Linden, New Jersey ("PREMISES"), covered under a
Ground Lease dated May 1, 1987, between LCP Chemicals & Plastics,
Inc., as landlord, and Union Carbide Corporation, as tenant, as
amended by letter agreement dated April 11, 1989 (collectively,
"LEASE"). UCIG is the successor in interest to Union Carbide
Corporation and LCP is the successor in interest to LCP Chemicals
& Plastics, Inc. (A copy of the LEASE is attached hereto as
Exhibit "A"); and

WHEREAS, UCIG has used the PREMISES to engage in the business
of compressing, purifying, repackaging, and selling, at
wholesale and retail, certain gases, including but not
limited to hydrogen, nitrogen, argon and oxygen and mixtures
containing such gases; and

WHEREAS, UCIG desires to sell to UPGAS and UPGAS desires to
purchase from UCIG certain assets used by UCIG in the conduct
of its business on the PREMISES; and

WHEREAS, UPGAS desires to use the assets purchased from UCIG to
conduct a business on the PREMISES similar to the business engaged
in by UCIG; and

WHEREAS, UPGAS desires to lease from LCP the PREMISES and LCP
desires to lease to UPGAS the PREMISES; and

WHEREAS, UCIG and LCP mutually desire to terminate the LEASE
covering the PREMISES; and

NOW THEREFORE, for good and valuable consideration, the receipt
and sufficiency of which is hereby acknowledged, the parties hereto
agree as follows:

1.) Effective August 31, 1990, the rights and
obligations of LCP as Lessor and UCIG as Lessee under the
LEASE shall terminate.

2.) Effective August 31, 1990, LCP as Lessor and
UPGAS as Lessee shall be bound by the terms and conditions
of the new lease covering the PREMISES (A copy of which
is attached hereto as Exhibit B).

3.) LCP hereby forever releases and discharges UCIG and
its successors, assigns, directors, employees, agents
or representatives past and present, from any and all claims
which may arise or have arisen under the LEASE except that
LCP does not release its claim for any claims, damages, loss,
or liability arising under the Environmental Cleanup Responsi-
bilities Act (N.J.S.A. 13:1K-G et seq.) requirements and regulations, a
under Federal or other state environmental protection statutes
and regulations.

- 4.) UCIG hereby forever releases and discharges LCP and its successors, assigns, directors, employees, agents or representatives past and present, from any and all claims which may arise or have arisen under the LEASE except that UCIG does not release its claim for any claims, damages, loss, or liability arising under the Environmental Cleanup Responsibility Act (N.J.S.A. 13:1K-G et seq.) requirements and regulations, and/or under Federal or other state environmental protection statutes and regulations.
- 5.) This Agreement shall be construed according to the laws of the State of New Jersey. If any provision herein shall be deemed void or inoperative in any manner, the remainder of this Agreement shall continue in full force and effect as if such void or inoperative provision did not exist.
- 6.) This Agreement (including all Exhibits hereto) contains the entire agreement between the parties hereto and no representation, written or oral, made prior to or contemporaneously with the execution hereof, shall be of any effect hereon. This Agreement may be modified or amended only by written instrument signed by all of the parties hereto.

IN WITNESS WHEREOF, the parties have executed three (3) original counterparts of this Agreement as of the day and year first above written.

Union Carbide Industrial Gases Inc.

By Sally Ann Savar
Title: Liquid Business Manager

LCP Chemicals NJ, Division of the Hanlin Group, Inc.

By Frank G. Hallard
Title: V.P. Purchasing

Ultra Pure Compressed Gases, Inc.

By Frank H. Thinn
Title: President

LEASE

1st page only - ^{original} document available

THIS LEASE, made as of the 31ST day of August,
between LCP Chemicals NJ, Division of Hanlin Group, Inc.,
a New Jersey corporation, having an office located at
100 West of South Wood Avenue, Linden, New Jersey 07036
hereinafter referred to as "Landlord") and Ultra Pure Compressed
Gases, Inc., a New Jersey corporation, having an office at 97
Highway 1A, Westboro, Massachusetts 01581 (hereinafter referred
to as "Tenant");

W I T N E S S E T H

1. Landlord hereby leases to Tenant and Tenant hereby
takes from Landlord the following described premises (hereinafter
referred to as the "Premises") upon the terms and conditions set
forth hereinafter which Landlord and Tenant covenant and agree to
observe and perform:

The Premises constitute the land with the buildings located
along Linde Road, in the City of Linden, County of New Jersey,
more particularly shown on Schedule A attached hereto and made a
part hereof.

2. The Premises are to be used and occupied by Tenant and its
servants, agents, and employees for such purposes as may from time
to time be generally incidental or accessory to the business of
Tenant and for such other purposes as Landlord may from time
to time approve of in writing. Tenant's present business is the
compressing, purifying, repackaging, and shipping of compressed gases
and the testing of the vessels used to contain compressed gases.
Such use and occupation shall at all times be in compliance with



INTERNAL
CORRESPONDENCE

ACS.

39 Old Ridgebury Road, Danbury, Connecticut 06817-0001

To V A Smith

Date March 6, 1987

Copy to

J R Crane, Newark
N A DiFranco, Somerset
A A Galvan
J G Lee

Originating Dept.

BULK GAS PRODUCTS

Subject

Linden (LCP) Lease

RECEIVED

MAR 11 1987

N.A. DiFRANCO

Vic:

Attached per our discussion in Chicago is the LCP Lease dated May 1, 1985, and expiring April 30, 1987.

I briefly reviewed the lease with John Crane, and he advised that there are several modifications that would be desirable. These are (1) expansion of the use provision in Article 3 to permit handling of other products (non-hazardous) than hydrogen, and (2) a recommendation from Nick DiFranco that the new agreement include language limiting our obligations covering property restoration.

I think both modifications, especially the latter, will be difficult to obtain without opening up initiatives for more money and concessions from Linde. However, both recommendations do merit of our consideration prior to discussions with LCP.

John Crane will investigate, on a local basis, the situation at LCP-Linden to help us assess their posture toward renewal of the lease. We should be sure to notify LCP of our intentions to renew pursuant to Article 19 which calls for not less than 30 days' notice prior to expiration. Our contact in prior lease discussions has been Mr. W. C. Calvert, Vice President - LCP at Edison, New Jersey.

Regards,

M. E. DeDomenico

MED:jmh
Attachment
8394/1

For reference

GROUND LEASE

THIS LEASE, made as of the 1st day of May, 1985 between LCP CHEMICALS & PLASTICS, INC., a Delaware corporation, having an office located at Raritan Plaza II, Raritan Center, Edison, New Jersey 08837 (hereinafter referred to as "Landlord") and UNION CARBIDE CORPORATION, a New York corporation, having an office at Old Ridgebury Road, Danbury, Connecticut 06817 (hereinafter referred to as "Tenant");

W I T N E S S E T H:

1. Landlord hereby leases unto Tenant and Tenant hires and takes from Landlord all that parcel of land situated along Linde Road in the City of Linden, County of Union, State of New Jersey, more particularly shown on Exhibit A attached hereto, being approximately 2.102 acres (hereinafter referred to as "Leased Land"), commencing on the effective date hereof and continuing for a period of two (2) years from such date. Rent shall be payable by Tenant to Landlord at monthly rate of Fifteen Hundred Dollars (\$1,500.00) in advance on the first day of each month during the term hereof.

2. Tenant has, at its cost and expense, constructed on the Leased Land a building and facilities for the compressing, purifying and shipment of hydrogen gas and storage of liquid hydrogen. Tenant will make no structural alteration, changes or modifications in the building and facilities without the prior written approval of Landlord, which approval will not be unreasonably withheld. The building, facilities, equipment and machinery placed by Tenant on the Leased Land shall remain the property of Tenant and shall be deemed to be

personal property although attached to the realty, subject, however, to all the other provisions of this Lease.

3. Tenant will use said building and facilities for the purpose of compressing, purifying and shipping hydrogen gas, the storage and shipment of liquid hydrogen and for the preparation of gas mixtures consisting chiefly of hydrogen mixed with minor amounts of other gases (which other gases shall be non-hazardous) and for no other purpose.

4. Tenant will obtain and maintain at its cost and expense, all approvals, licenses, permits and certificates required in connection with the use or operation of said building and facilities.

5. Throughout the term hereof Tenant will take good care of the Leased Land and at its own cost and expense will make as and when needed all repairs, whether such repairs are structural, ordinary or extraordinary, in and about the Leased Land necessary to keep it in good order and condition. Such repairs shall be, in quality and class, substantially equal to the original work and materials. Landlord may enter upon the Leased Land to inspect the premises during business hours. Tenant will keep the Leased Land clean and free of rubbish and refuse.

6. Tenant shall have the sole responsibility of maintaining the security of the buildings and facilities on the Leased Land and shall lock the buildings and gates during all periods when no personnel of Tenant are scheduled to be on duty. Landlord and Tenant shall arrange for Landlord's access to the property in the event of emergency during such absence of personnel.

7. Tenant will pay and discharge all mechanics liens, taxes and assessments for local improvements and payments of every nature and kind which may during the demised term be assessed, levied or imposed upon the Leased Land or any part thereof and the building and facilities located thereon. If Tenant fails to pay any such lien, tax or assessment when due, Landlord may pay the same including any interest or penalty and the same shall become due and payable as additional rent on the first day of the month after Landlord makes such payment. Landlord shall pay or reimburse Tenant the portion of all taxes and assessments on the Leased Land which are based on the unimproved value of the land itself. In the event that the improvements on the Leased Land do not constitute a separate tax lot for which a separate tax bill is rendered but forms part of a larger tax lot, which includes other property owned by the Landlord, the amount of tax or assessment or other payment attributable to the improvements on the Leased Land shall be determined in a manner reflecting proportionate share of such tax or assessment represented by such improvements.

8. Tenant will promptly comply, at its cost and expense, with all laws, ordinances, regulations and requirements of Local, State and Federal Governments, and all agencies and subdivisions thereof, and of all other departments, bureaus, officials, boards and commissions with regard to the Leased Land or the use and operation thereof by Tenant. If any such law, ordinance, regulation or requirement shall not be promptly complied with by Tenant, then Landlord may, at its option, upon reasonable prior notice to Tenant, enter upon the Leased Land to comply therewith, and should any fine or penalty be imposed for failure

to comply therewith, or cost be incurred by Landlord in complying therewith, Tenant agrees that Landlord may, at its option, pay such fine or penalty or incur such cost, which Tenant agrees to repay to Landlord with interest from the date of payment, as additional rent on the first day of the month after Landlord has paid such fine or penalty.

9. Landlord will maintain and keep Linde Road in good repair and apportion the cost of maintenance and repair among all the users thereof, except Consolidated Rail Corporation, on a fair and equitable basis having due regard to the amount of use and tonnage hauled over Linde Road by each user. Tenant will pay its proportionate share of such cost, with Tenant's share not to exceed Five Thousand Dollars (\$5,000.00) in any one year, payable within ten (10) days after receipt of Landlord's invoice therefor. Landlord shall be entitled to bill annually, semi-annually or quarterly, at its option.

10. Landlord grants to Tenant the right to maintain at Tenant's cost and expense an iron pipe from the Leased Land to the existing ditch north of the Leased Land for the discharge of process water. The location of said pipeline is indicated on Exhibit A attached hereto. Tenant will maintain said pipeline and keep it in good repair at its own cost and expense and upon the termination of this Lease for any reason shall surrender the said pipeline to Landlord. If use of said pipeline or ditch is prohibited by any governmental authority or the discharge violates governmental standards, Tenant will be required to make its own provision for disposal of process water.

11. Landlord grants permission to Tenant to install and maintain a railroad siding and switch at the locations indicated on Exhibit A at

Tenant's expense. Tenant shall bear the full cost and expense of maintenance of the side-track switch. Tenant agrees to use said siding for, and only for, one liquid hydrogen car at any one time, but only during emergency periods when Landlord cannot supply hydrogen gas to Tenant. Tenant also agrees to give Landlord advance notice when it expects to bring in liquid hydrogen and to keep the liquid hydrogen car on the siding enclosed in a fenced-in area.

12. In consideration of the Landlord's weighing of the Tenant's liquid trailers, Tenant will pay Twenty Dollars (\$20.00) per weigh within ten (10) days after receipt of Landlord's invoice therefor.

13. Tenant has constructed at Tenant's cost and expense a fence enclosing the Leased Land, and Tenant will not permit its employees, guests, agents, invitees, or licensees at any time to enter upon Landlord's property (other than the Leased Land and Linde Road marked on Exhibit A) without first obtaining the consent of the Landlord. If any such persons do enter upon Landlord's property, with or without Landlord's consent, Tenant will forever indemnify and save harmless Landlord from and against all liability, penalties, damages, expenses and judgments arising from injury or loss of life during the term hereof to any such persons and will forever indemnify Landlord for any damage to Landlord's property caused by any such persons while on Landlord's property.

14. Tenant will forever indemnify and save harmless Landlord from and against any and all liability, penalties, damages, expenses and judgments arising from (a) personal injury to or loss of life of third parties, (b) damage to property of third parties during the term hereof

of any nature, sustained in or about the Leased Land, and (c) and matter or thing growing out of the occupation and use of the Leased Land and asserted against Landlord by a third party by reason of its ownership of the Leased Land or for any other reason, and which is (i) not caused by negligence of Landlord, and (ii) occasioned wholly or in part by an act or omission of Tenant, or of its employees, contractors, guests, agents, invitees, licensees or assigns.

15. If at any time during the continuance of this Lease the grade of any street or highway near or adjacent to the Leased Land shall be changed pursuant to any order which may be made by the State of New Jersey or by the Board of Public Utility Commissioners or by other lawful authority, Tenant agrees to waive and release any claim or damages whatsoever which it may have by reason of any and all injury or damage caused by or resulting from said change of grade.

16. If the building and/or facilities located on the Leased Land are partially damaged by fire, explosion, flood, earthquake, riot, civil commotion, storm or other casualty, Tenant will repair such damage at its costs and expense and restore the Leased Land to its former condition as expeditiously and promptly as possible. Plans and specifications for such repairs will be submitted by Tenant to Landlord for approval prior to the work being done and Landlord shall not unreasonably withhold or delay such approval. If the Leased Land is damaged by fire, explosion, flood, earthquake, riot, civil commotion, storm or other casualty to an extent which substantially destroys the building and facilities and requires their reconstruction to permit their use as herein provided, Tenant within thirty (30) days after the occurrence of any such event will advise

Landlord in writing of its election to reconstruct the building and facilities or to vacate the Leased Land. If Tenant elects to vacate, it will remove from the Leased Land all of its property and restore the Leased Land to the condition existing prior to Tenant's construction described in Paragraph 2 hereof, except for the removal of piling, within a reasonable period after giving such notice. If Tenant elects to reconstruct the building and facilities, it will perform such work as expeditiously and promptly as possible.

17. Upon the expiration or other termination of this Lease for any reason Tenant shall vacate or surrender to Landlord free and clear of all encumbrances of liens the building and facilities (exclusive of equipment and machinery) located on the Leased Land except that Tenant will remove Tenant's equipment, machinery, personal property and tools. Tenant shall execute such instruments or writings as may be deemed necessary to properly effect the surrender of said building and facilities and their transfer to Landlord; and such building and facilities will be surrendered in good order or condition, reasonable wear and tear excepted. Upon such surrender, said building and facilities shall, without cost or charge to Landlord, become the property of Landlord, free of all liens and claims of Tenant and others.

18. In the event that Landlord elects to sell the Leased Land, Landlord shall give Tenant written notice of such intent, and if Tenant wishes to purchase the Leased Land, it shall so notify Landlord in writing within thirty (30) days after receipt of such notice, and the parties shall negotiate in good faith an acceptable purchase price and payment terms. In the event that Landlord and Tenant do not execute a suitable

agreement setting forth the conditions of sale, including price, within sixty (60) days after Landlord's notice of intent to Tenant, then Tenant's purchase rights hereunder shall automatically expire.

19. Not less than thirty (30) days prior to the expiration of the term hereof, Tenant may notify Landlord that it wishes to continue to lease the Leased Land or to purchase the Leased Land. Thereupon the parties shall negotiate in good faith such continued lease or purchase upon mutually acceptable terms. If, after good faith negotiations, the parties are unable to agree upon mutually acceptable terms for such lease or purchase prior to the expiration of the term hereof, the parties shall have no further obligations hereunder.

20. Tenant shall not, without the prior written consent of Landlord,

(a) assign or transfer, by operation of law or otherwise, this Lease or any interest therein,

(b) underlet the Leased Land or any part thereof,

(c) mortgage or encumber the same, or

(d) permit the same to be occupied by anyone other than Tenant or Tenant's officers or employees.

21. Landlord covenants that if Tenant shall duly keep and perform all the conditions hereof, Tenant shall peaceably and quietly have, hold and enjoy the Leased Land for the term hereof.

22. If there be a default in any of the covenants herein contained, upon twenty (20) days' prior written notice to Tenant specifying the nature of such default (during which period Tenant shall have the

right to cure such default) Landlord shall have the right to re-enter the Leased Land and to have, repossess and enjoy same, provided that Tenant has not duly cured said default during such notice period.

23. It is expressly understood and agreed that in case the Leased Land shall be abandoned, or if default continues in the payment of the rent or any part thereof as herein specified after fifteen (15) days' written notice from Landlord, or if, without the consent of Landlord, Tenant shall sell, assign, or mortgage this Lease or any part thereof, or underlet the Leased Land or any part thereof, or if default continues in the performance of any of the covenants and agreements in this Lease contained on the part of the Tenant to be kept and performed after twenty (20) days' prior written notice from Landlord, Landlord may, if Landlord so elects, at any time thereafter terminate this Lease and the term thereof, upon giving to Tenant five (5) days' notice in writing of Landlord's intention so to do, and upon the giving of such notice, this Lease and the term thereof shall terminate, expire and come to an end on the date fixed in such notice as if said date were the date originally fixed in this Lease for the termination or expiration thereof.

24. In the event the Leased Land or any part thereof be condemned for public use, then in that event, upon the taking of the same for such public use, this Lease, at the option of the Tenant, shall become null and void, and the term shall cease and come to an end upon the date when the same shall be taken and the rent shall be apportioned as of said date. No part of any award, however, shall belong to the Tenant, except that amount which is granted for

building and facilities constructed by Tenant.

25. This Lease is, and shall be, subject and subordinate in all respects to all mortgages and liens of any kind which may now or hereafter affect the Leased Land or the real property of which the Leased Land forms a part, and to all renewals, modifications, consolidations, replacements and extensions thereof; provided, however, that Landlord shall obtain agreement from any such mortgagee or lienor that for so long as Tenant is not in default hereunder, (i) Tenant shall peaceably and quietly have, hold and enjoy the Leased Land for the term hereof, and (ii) any such mortgagee or lienor shall have no right, lien, encumbrance or security interest in any machinery or equipment (including fixtures) which is attached or made a part of the Leased Land or any buildings or improvements constructed thereon by Tenant. Tenant shall, in confirmation thereof, execute promptly any certificate or certificates Landlord may reasonably request in that connection.

26. Landlord shall have no obligation hereunder to supply, or pay for, any heat, fuel, electricity or water, or any equipment therefor, or any sewage, or other waste, disposal pipes or equipment, or any other utility or service of any kind.

27. The covenants and agreements herein contained are binding on the parties hereto and upon their respective successors and permitted assigns.

28. Words used in the singular shall include words in the plural where the text of this instrument so requires.

IN WITNESS WHEREOF, the parties have executed this Lease by their duly authorized officers and caused their corporate seals to be hereto affixed, the day and year first above written.

LCP CHEMICALS & PLASTICS, INC.

By WC Calvert. Jr

Title Vice Chairman

UNION CARBIDE CORPORATION

By Paul J. Bild *Emel*

Title Manager, Process Gases

SECURITY AGREEMENT AND LEASEHOLD MORTGAGE

AGREEMENT made this 31st day of August, 1990 by and between ULTRA PURE COMPRESSED GASES, INC., a corporation having its principal place of business at 97 Turnpike Road, Westborough, Massachusetts 01581 (hereinafter called the "Debtor"), and UNION CARBIDE INDUSTRIAL GASES INC. a Delaware corporation having offices at 39 Old Ridgebury Road, Danbury, Connecticut 06817-0001 (hereinafter called the "Secured Party").

W I T N E S S E T H:

1. Security Interest and Leasehold Mortgage

(a) The Debtor hereby grants and conveys to the Secured Party a security interest in all the property, described in Schedule A attached hereto, now owned or hereafter acquired, including any and all additions, accessions and substitutions thereto and all proceeds of its sale or other disposition including any insurance proceeds and the accounts receivable resulting therefrom (the foregoing hereinafter collectively called the "Collateral").

(b) The security interest is hereby granted as security for any and all debts and obligations of the Debtor to the Secured Party of every kind and description, direct or indirect, absolute or contingent, joint or several, due or to become due, now existing or hereafter arising, including but

This document was prepared by

Robert S. Burstein
Attorney-At-Law
113A Riverbend Road
Stratford, CT 06497

not limited to any and all obligations evidenced by promissory notes including but not limited to a Promissory Note of even date herewith in the amount of \$200,000 made by the Debtor to the Secured Party (the foregoing hereinafter called the "Obligations").

2. Representations and Warranties

The Debtor represents and warrants as follows:

(a) To pay and perform all of the Obligations according to their terms.

(b) To defend the title to the Collateral against all claims and demands whatsoever, which Collateral, except for the security interest granted hereby, is lawfully owned by the Debtor and is now free and clear of any and all liens, security interests, claims, charges, encumbrances, taxes and assessments except as may be set forth in Schedule A attached hereto.

(c) On demand of the Secured Party, to furnish further assurance of title, execute any written agreement or do any other acts necessary to effectuate the purposes of this Agreement.

(d) To retain possession of the Collateral during the existence of this Agreement and except as provided herein, not to sell, exchange, assign, loan, deliver, lease, mortgage or otherwise dispose of same without the written consent of the Secured Party.

(e) To keep all records concerning the Collateral at the location specified in Schedule A and except as provided herein to keep the Collateral itself at said location.

(f) To pay, when due, all taxes, assessments and license fees relating to the Collateral.

(g) To have and maintain insurance at all times with respect to all Collateral, against risks of fire (including so-called "extended coverage") and such other risks customarily insured against by companies engaged in similar business to that of the Debtor, in such amounts and with such insurers as may be satisfactory to the Secured Party, such insurance to be payable to the Secured Party and the Debtor as their interests may appear. The Debtor shall furnish to the Secured Party certificates or other evidence satisfactory to the Secured Party of compliance with these insurance requirements. If any proceeds under any insurance policies are paid to the Secured Party while the Obligations are outstanding, the Secured Party may apply such proceeds to the payment of the Obligations or, provided the Debtor is not in default under this Agreement, release such proceeds to the Debtor for the purpose of replacing the lost, damaged or destroyed Collateral with respect to which such proceeds were paid.

(h) If this Agreement is security for a loan to be used to pay a part or all of the purchase price of the Collateral, to use the proceeds of the loan to pay the purchase price, filing fees and insurance premiums. The Secured Party however, may pay the proceeds directly to the seller of the Collateral.

(i) To immediately notify the Secured Party, in writing, of any change in or discontinuance of the Debtor's place or places of business and/or residence.

(j) That if the Collateral has been attached to or is to be attached to real estate, a description of the real estate and the name and address of the record owner is set forth in Schedule A; if the said Collateral is attached to real estate prior to the perfection of the security interest granted hereby, Debtor will on demand of the Secured Party furnish the latter with a disclaimer or disclaimers, signed by all persons having an interest in the real estate, of any interest in the Collateral which is prior to the Secured Party's interest.

3. Records: Certificate of Title

(a) The Debtor shall at all reasonable times and from time to time allow the Secured Party's representatives to examine and inspect the Collateral, including records relating to the proceeds therefrom.

(b) If certificates of title are issued or required with respect to any of the Collateral, the Debtor shall cause the interest of the Secured Party to be properly noted thereon.

4. Sale or Other Disposition of Collateral

Until default by the Debtor hereunder, the Debtor may use the Collateral in any lawful manner not inconsistent with this agreement or with the terms or conditions of any policy of

insurance thereon and, if the Collateral consists of inventory, the Debtor may also sell or otherwise dispose of the inventory and the products thereof in ordinary course of business. A sale in the ordinary course of business does not include a transfer in partial or total satisfaction of a debt. Except as otherwise provided herein, the Debtor will not sell or offer for sale or otherwise transfer any of the Collateral or any interest therein without the prior written consent of the Secured Party.

5. Collections and Notices of Assignment of Accounts Receivable Arising Out of the Sale of Inventory

If the Collateral consists of inventory or accounts receivable and the proceeds therefrom, then:

(a) So long as the Secured Party does not request that the account debtor be notified of the assignment to the Secured Party of accounts receivable arising out of the sale of inventory, the Debtor shall receive all proceeds therefrom, make collections and shall have full dominion and control over such proceeds.

(b) At any time before or after default by the Debtor hereunder, the Debtor, when requested in writing by the Secured Party, shall deliver to the Secured Party a list or copies of all accounts receivable with the addresses of each account debtor arising out of the sale of inventory and/or copies of all invoices and records of collection or aging of such

accounts receivable. The Secured Party, at any time before or after default, may notify the account debtor that the accounts receivable arising out of the sale of the inventory have been assigned and should be paid directly to the Secured Party and not to the Debtor and that said account debtor should deliver to the Secured Party, promptly upon receipt, all proceeds from the sale of the inventory. The Debtor agrees that after default, all monies received by it, from the account debtors arising out of the sale of inventory shall immediately be turned over to the Secured Party in accordance with the Secured Party's instructions, and that if, despite this provision, the Debtor receives any funds after such notification by the Secured Party, the Debtor shall hold such funds in trust for the Secured Party.

6. Taxes, Assessments and Governmental Charges

The Debtor shall pay promptly when due, all taxes, assessments and governmental charges imposed upon it or its properties, including without implied limitation, income, sales and use taxes and assessments upon the Collateral.

7. Maintenance and Preservation of Collateral

The Debtor shall, at its own cost and expense, maintain and preserve the Collateral in good order and condition and will not permit the Collateral to be wasted or destroyed or allow it to deteriorate except for normal wear and tear and shall use all reasonable and diligent efforts to

collect when due accounts receivable arising out of the sale of inventory.

The Debtor shall, at its own cost and expense, observe and perform all covenants and agreements required to be observed and performed by it pursuant to a lease dated August 31, 1990 (hereinafter called the "Lease") between the Debtor, as tenant, and LCP Chemicals NJ, Division of Hanlin Group, Inc., as landlord, for those certain premises located along Linde Road in the City of Linden, County of Union, State of New Jersey and more fully described on Exhibit A hereto. The Secured Party, at its option, may cure any default by the Debtor under the Lease, but shall not be obligated to do so. Any payment made or expense incurred by the Secured Party pursuant to this Section shall be added to the indebtedness of the Debtor to the Secured Party, shall be payable on demand, shall be secured by this Agreement, and shall bear interest at the rate of twelve percent (12%) per annum until paid. The Debtor shall deliver to the Secured Party simultaneously with the execution of this Agreement a consent of the landlord under the Lease to the security interest in the Lease granted to the Secured Party hereby, which consent shall contain the agreement of the landlord to send a copy of any notice of default under the Lease to the Secured Party and to allow the Secured Party to cure any default under the Lease. Said consent shall contain a further agreement of the landlord to recognize the

Secured Party as the tenant under the Lease if the Secured Party forecloses on its security interest.

The Debtor shall not surrender its leasehold estate and interest hereinbefore described, nor terminate or cancel the Lease; nor without the express written consent of the Secured Party modify, change, supplement, alter, or amend the Lease either orally or in writing. As further security for the repayment of the indebtedness secured hereby and for the performance of the covenants herein and in the Lease contained, the Debtor hereby assigns to the Secured Party all of its rights, privileges, and prerogatives as tenant under the Lease to terminate, cancel, modify, change, supplement, alter, or amend the Lease, and any such termination, cancellation, modification, change, supplement, alteration, or amendment of the Lease without prior written consent thereto by the Secured Party shall be void and of no force or effect.

No release or forbearance of any of the Debtor's obligations under the Lease, pursuant to the Lease or otherwise, shall release the Debtor from any of its obligations under this Agreement, including its obligations with respect to the payment of rent as provided in the Lease and the performance of all of the terms, provisions, covenants, conditions and agreements contained in the Lease, to be kept, performed and complied with by the tenant therein.

Unless the Secured Party shall otherwise expressly consent in writing, the fee title to the property demised by the Lease and the leasehold estate shall not merge but shall always

remain separate and distinct, notwithstanding the union of said estates either in the lessor or in the lessee, or in a third party by purchase or otherwise.

8. No Other Security Interests or Financing Statements, Etc.

The Debtor shall not permit or suffer to exist any other security interest in or lien upon the Collateral nor any financing statement covering the Collateral to be on file in any public office, except such as set forth in Schedule A. The Debtor shall defend the Collateral against all claims and demands of all persons at any time claiming the same or any interest thereon and shall give the Secured Party notification of such claims. The Secured Party, however, may contest any claims made against the Debtor in the name of the Debtor wherein the security interest hereunder would be impaired by an adverse decision and the Secured Party may charge to the Debtor its expenses, including but not limited to attorney's fees, in defending any such claims.

9. Costs and Expenses Paid by the Secured Party

At its option, the Secured Party may pay for insurance on the Collateral and taxes, assessments or other charges which the Debtor fails to pay in accordance with the provisions hereof, and may discharge any security interest in or lien upon the Collateral. Any payment made or expense incurred by the Secured Party pursuant to this Section shall be added to the indebtedness of the Debtor to the Secured Party, shall be

payable on demand, shall be secured by this Agreement, and shall bear interest at the rate of twelve percent (12%) per annum until paid.

10. Financing Statements

At any time and from time to time the Debtor agrees to join with the Secured Party in executing financing statements pursuant to the Uniform Commercial Code, in a form satisfactory to the Secured Party. The Debtor shall pay all costs of filing any and all financing, continuation or termination statements with respect to the security interest created by this Agreement. Debtor further authorizes the Secured Party to file a financing statement or any other document necessary to perfect and continue this security interest in the Collateral.

11. Miscellaneous

(a) The Debtor shall do, make, execute and deliver all such additional and further acts, things, deeds, assurances and instruments as the Secured Party may reasonably require for the purpose of more completely vesting in and assuring to the Secured Party its rights hereunder and in or to the Collateral.

(b) Any notice or demand which by any provision of this Agreement is required or provided to be given shall be deemed to have been sufficiently given or served for all purposes by being sent by commercial courier or as certified mail, return receipt requested, postage prepaid, if to the

Debtor at the address at which the Secured Party customarily communicates with the Debtor and if to the Secured Party at:

Union Carbide Industrial Gases Inc.
39 Old Ridgebury Road
Danbury, Connecticut 06817-0001
Attn: Vice President-Bulk Industrial Gases.

(c) All rights of the Secured Party hereunder shall inure to the benefit of its successors and assigns and all obligations of the Debtor hereunder shall bind its successors and assigns.

(d) This Agreement and all of the rights, remedies and duties of the Secured Party and the Debtor shall be governed by the Uniform Commercial Code.

(e) Time is of the essence as to all the obligations on the part of the Debtor to be done and performed hereunder.

(f) This Agreement shall not be modified or changed except by written instrument executed by the duly authorized officers of the parties hereto. This Agreement contains the entire agreement between the parties and there are no representations, understandings, or agreements, oral or otherwise which are not included herein.

12. Events of Default

In the event of a default, as hereinafter set forth, the Secured Party may declare all the Obligations to be immediately due and payable, without presentment, demand, protest or other notice of dishonor of any kind, all of which are hereby expressly waived. No delay in accelerating the

maturity of any Obligation as aforesaid or in taking any other action with respect to any event of default shall affect the rights of the Secured Party to later take such action with respect thereto and no waiver as to any one event of default shall affect the rights of the Secured Party as to any other default.

An event of default shall be deemed to have occurred if (i) the Debtor should be or become insolvent; (ii) any proceeding should be brought seeking any reorganization, arrangement, composition, readjustment, liquidation, dissolution or similar relief, of or with respect to the Debtor under the present or any future Federal Bankruptcy Code or any Federal, State or any other statute, law or regulation; (iii) any proceeding should be brought seeking the appointment of a receiver or similar officer of the court with respect to the Debtor's business or property; (iv) the Debtor should make a general assignment for the benefit of creditors; (v) the Debtor should be in default in the payment of any Obligation secured by this Agreement when the same shall be due and payable; (vi) the Debtor should be in default in the due observance or performance of any covenant or agreement herein contained; (vii) any warranty or representation made or furnished to the Secured Party by or on behalf of the Debtor proves to be false when made or furnished; (viii) there should be any loss, theft, substantial damage, reduction in value, destruction or encumbrance of any of the Collateral; (ix) the Secured Party

should deem itself insecure; or (x) the Debtor should be in default in the due observance or performance of any covenant or agreement contained in: (A) the Promissory Note of even date herewith made by the Debtor to the Secured Party in the original principal amount of \$200,000; (B) the Tank Lease Agreement or the Product Supply Agreement, both of even date herewith between the Debtor and the Secured Party; (C) the Product Supply Agreement of even date herewith among the Debtor, the Secured Party and Linde Gases of the Mid-Atlantic, Inc., a New Jersey corporation (hereinafter called "LGMA"); (D) the Product Supply Agreement or the Cylinder Maintenance Agreement, both of even date herewith between the Debtor and LGMA; or (E) the Lease.

13. Remedies; Attorneys Fees

If any of the events of default specified herein shall occur, the Secured Party may exercise and shall have any and all rights and remedies afforded to it by the Uniform Commercial Code and other applicable laws in addition to the rights and remedies provided herein. In addition, the Secured Party may require the Debtor to assemble the Collateral or any part thereof which the Secured Party in its sole discretion wishes to repossess and make it available to the Secured Party at a place to be designated by the Secured Party which is reasonably convenient to both parties, or the Secured Party may in its discretion enter upon the Debtor's premises peaceably by

the Secured Party's own means or with legal process and take possession of the Collateral or render it unusable, or dispose of the Collateral on the Debtor's premises and the Debtor agrees not to resist or interfere. The requirement of reasonable notice shall be met, if notice is mailed, postage prepaid to the Debtor or other person entitled thereto at least five (5) days before the time of sale or disposition of the Collateral. The Debtor shall pay to the Secured Party on demand any and all expenses, including legal expenses and attorneys' fees, incurred or paid by the Secured Party in protecting or enforcing any rights or remedies of the Secured Party hereunder, including, but not limited to, the collection of the Obligations, its right to take possession of the Collateral and to store and dispose of the Collateral, or to collect the proceeds therefrom. The Debtor shall remain liable for any deficiency resulting from a sale of the Collateral and shall pay any such deficiency to the Secured Party on demand.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed on the day and year first above written.

Attest:

Pat S. Grady

ULTRA PURE COMPRESSED GASES, INC.

By

Frank H. Davis

Title

UNION CARBIDE INDUSTRIAL GASES
INC.

By

Sally Ann Savoia

S. A. Savoia,
Liquid Business Manager

Attest:

STATE OF CONNECTICUT

COUNTY OF FAIRFIELD

SS.: Danbury

I CERTIFY that on August 31, 1990, Pat L. Grady personally came before me, and this person acknowledged under oath, to my satisfaction, that:

(a) this person is the _____ secretary of Ultra Pure Compressed Gases, Inc., the corporation named in this document;

(b) this person is the attesting witness to the signing of this document by the proper corporate officer who is Frank H. Finn the _____ President of the corporation;

(c) this document was signed and delivered by the corporation as its voluntary act duly authorized by a proper resolution of its Board of Directors;

(d) this person knows the proper seal of the corporation which was affixed to this document; and

(e) this person signed this proof to attest to the truth of these facts.

Signed and sworn to before me on August 31, 1990.

Robert S. Burstein
Robert S. Burstein
Commissioner of the Superior Court
~~Notary Public~~
~~My commission expires.~~

Pat L. Grady
Pat L. Grady

ATTACHMENT A TO SECURITY AGREEMENT

That parcel of land situated along Linde Road in the City of Linden, County of Union, State of New Jersey, more particularly shown on the map attached hereto, being approximately 2.102 acres.

SCHEDULE A

The following assets of the Debtor affixed to, placed upon, or used in connection with the operation of Debtor's business located along Linde Road in the City of Linden, County of Union, State of New Jersey (all of which is collectively referred to as the "Collateral"):

(a) the machinery, equipment, vehicles, furniture and fixtures identified on Exhibit A attached hereto, and all accessions thereto;

(b) all rights as tenant under that certain Lease dated August 31, 1990 (the "Lease") between the Debtor, as tenant and LCP Chemicals NJ, Division of Hanlin Group, Inc., as landlord, relating to the premises located along Linde Road in Linden, New Jersey (the "Premises");

(c) any and all products and proceeds of the foregoing, in any form (including without limitation any insurance proceeds or claims by the Debtor against third parties, for loss or damage to or destruction of any or all of the foregoing Collateral).

A legal description of the Premises is attached hereto as Attachment A.

All of the Collateral, including all records concerning the Collateral, shall be kept at the Debtor's place of business located at the Premises.

The Collateral is free of all liens, security interests, claims, charges, encumbrances, taxes and assessments except as follows:

None.

EXHIBIT A

PURCHASED ASSETS

TRKR Loading Center
Electrical Upgrade
Switchgear
Switchgear
Power Wiring
Power Wiring
Motor Starter
HYD Compressor M 46068 Comp
HYD Compressor M 46068 Inst
KD-30 Pump 87-0442
Liquid HYD Pump Inst 84154991
Liquid HYD Pump Inst/Pipe, VAP
Regulated Relief Valve
Cooling Tower
VIP Piping
HP Vaporizers 4 2 HEX 2 WO
Solenoid Valves
Overhead Crane
Oxy Montor AnlZR
Hi Purity Most AnlZR
Gas Chromatograph
Shutoff System
Collar Removal Tool
Hydrotest Pump 18653
Valving Machine Galiso 508212
Cylinder Drier Magna Fab
Oil Remov Syst-Balston 4 Units
Surge Tank For Norwalk Compr
Hydrotest Jacket, Cons, Air HS
Meco Analyzer Model W
Teledyne Model 316
Hewlett Packard Integrator
Beckman Hydrbn Analyz M 400
Gow Mac Model 20-150
Spectrum Amplfr 1021A W Fltr
Power Line Voltage Stabilizer

BILL OF SALE

KNOW ALL PERSONS BY THESE PRESENTS, that UNION CARBIDE INDUSTRIAL GASES INC., a Delaware corporation (hereinafter called "Seller"), for and in consideration of Ten Dollars and other valuable consideration, cash in hand paid by ULTRA PURE COMPRESSED GASES, INC., a New Jersey corporation (hereinafter called "Purchaser"), receipt whereof is hereby acknowledged, does, subject to the terms and conditions hereinafter set out, hereby bargain, sell, transfer, assign, set over and deliver to Purchaser, the assets described on Exhibit A attached hereto (the "Purchased Assets"), which assets are located upon Seller's former hydrogen facility along Linde Road in Linden, New Jersey.

Purchaser accepts the Purchased Assets "as is, where is."

It is expressly understood and agreed that Seller makes no warranties or guarantees, either express or implied, as to the Purchased Assets, except that they are free and clear of all mortgages, liens and security interests. NO WARRANTY OR GUARANTY SHALL BE IMPLIED OR OTHERWISE CREATED UNDER THE UNIFORM COMMERCIAL CODE (OTHER THAN THE WARRANTY OF TITLE AS PROVIDED UNDER THE UNIFORM COMMERCIAL CODE), OR OTHERWISE, INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

Purchaser accepts all risks and assumes all liabilities in the possession, operation and use of the Purchased Assets, and shall indemnify and hold harmless Seller from all claims, damages, losses and liabilities, including reasonable attorneys' fees, due to the use of the Purchased Assets by Purchaser on or after the date hereof or any personal injury, death and property damage or destruction arising on or after the date hereof out of the possession, operation or use of the Purchased Assets.

IN WITNESS WHEREOF, the parties have executed this instrument this 31st day of August, 1990.

UNION CARBIDE INDUSTRIAL
GASES INC. (SELLER)

By Sally Ann Savoia
S. A. Savoia,
Liquid Business Manager

ULTRA PURE COMPRESSED GASES,
INC. (PURCHASER)

By Frank H. Thun
Title President

EXHIBIT A

PURCHASED ASSETS

TRKR Loading Center
Electrical Upgrade
Switchgear
Switchgear
Power Wiring
Power Wiring
Motor Starter
HYD Compressor M 46068 Comp
HYD Compressor M 46068 Inst
KD-30 Pump 87-0442
Liquid HYD Pump Inst 84154991
Liquid HYD Pump Inst/Pipe, VAP
Regulated Relief Valve
Cooling Tower
VIP Piping
HP Vaporizers 4 2 HEX 2 WO
Solenoid Valves
Overhead Crane
Oxy Montor Anlzt
Hi Purity Most Anlzt
Gas Chromatograph
Shutoff System
Collar Removal Tool
Hydrotest Pump 18653
Valving Machine Galiso 508212
Cylinder Drier Magna Fab
Oil Remov Syst-Balston 4 Units
Surge Tank For Norwalk Compr
Hydrotest Jacket, Cons, Air HS
Meco Analyzer Model W
Teledyne Model 316
Hewlett Packard Integrator
Beckman Hydrclbn Analyz M 400
Gow Mac Model 20-150
Spectrum Amplfr 1021A W Fltr
Power Line Voltage Stabilizer

PRAXAIR

DRY ICE PLANT - P.O. BOX 130 - BURLINGTON, NJ
609/387-0770 - FAX 609/387-8135

FAX FOR: NICK DIFRANCO

DATE: _____

LOCATION: _____

FROM: BOB BROWN

LOCATION: BURLINGTON, NJ

TOTAL PAGES (INCLUDING COVER) 2

MESSAGE: ATTACHED IS THE LEGAL FIRM
WHICH WAS HANDLING THE ECRA
NON-APPLICABILITY FOR BRIAN CURTIS.
I'M NOT SURE WHERE THE FINAL
DETERMINATION WENT.

Stopped paying rent in March '96

Facility used ~~to be~~ as a distribution depot for CO₂, had driver
& receiver, no storage of product in 1995

**LIQUID CARBONIC
CARBON DIOXIDE CORPORATION**

OFFICE PLANT

P.O. BOX 130

BURLINGTON, NJ 08016



AREA CODE 609 - 387-0770

January 24, 1995

Dave Paulin
Hanck - Wiesman
4 Becker Farm Road
Roseland NJ 07068

Dear Mr. Paulin:

Pursuant to our conversation on January 4, 1995, I looked through the Linden depot files to locate any correspondence which may relate to environmental issues regarding closing the Linden, NJ facility.

Attached are the following:

1. 1991 - State of New Jersey Right to Know Survey
2. May 1990 - New Jersey State Department of Health Inspection
3. January 1992 - N.J.D.E.P. (ECRA) correspondence received
4. LCP Chemical's letter regarding liabilities
5. March 1993 - Letter to drivers and vendors regarding disposal of waste
6. 1991 OSHA 2000 Form showing 8/23/91 acid leak at LCP Chemical
7. 1992 - ECRA Applicability Letter to B. Curtis
8. 1992 - Emergency Management Plan

I did not find a Site Assessment in the files. Please call me at (609) 387-0770 if I can be of further assistance.

Sincerely,

Robert W. Brown

RWB/ac
att.

cc: Dave Keierleber
Brian Curtis
Dan Dalner
File

DEQ-094

10/94

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

PAF

COMMUNITY RIGHT TO KNOW SURVEY FOR 1994

For State and Federal Community Right to Know Reporting

*Please type this form.*THIS PAGE MUST BE COMPLETED, SIGNED, AND RETURNED

✓ 6 1 8 3 5 5 0 0 0 0 3 2 8 1 3

ATTN: ROBERT BROWN,
LIQUID CARBONIC CARBON DIOXIDE CORP.,
FOOT OF WOOD AVE SOUTH
LINDEN, NJ 07036

A

6 1 8 3 3 5 0 0 0 0 3 2 0 0 9

LIQUID CARBONIC CARBON DIOXIDE CORP.,
FOOT OF WOOD AVE SOUTH

See instructions (Pages 8-9) if information on these labels is incorrect.

B Does this facility Produce, Store or Use any Environmental Hazardous Substances listed on Table A: 1. in any quantity? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No 2. above thresholds? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		D Number of employees at facility <u>9</u>
C Briefly describe the nature of the operations or business conducted at this facility: <u>CARBONDIOXIDE DISTRIBUTION</u>		E Number of facilities in New Jersey <u>2</u>
H Check box if facility is reporting pursuant only to Section 312 of the Federal Emergency Planning and Community Right to Know Act (EPCRA/SARA, Title III) <input type="checkbox"/>		F Federal EIN G If you are claiming an R&D lab exemption for <u>this facility</u> , enter your approval number here.
I FACILITY EMERGENCY CONTACT Name <u>ROBERT W. BROWN</u> Title <u>FACILITY MANAGER</u> Facility Phone Number <u>(609) 387-0770</u> Emergency Contact Phone Number <u>(609) 387-0770</u>		



NOTE: Check box only if the facility information in boxes A, D, E, I or J has changed since your last submission.

J CERTIFICATION OF OWNER/OPERATOR OR AUTHORIZED REPRESENTATIVE — I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

Signature Robert W. Brown

Date 3-2-95

Fax # (609) 387-

Phone # (609) 387-0770

Name ROBERT W. BROWN

Title FACILITY MANAGER

RETURN SIGNED ORIGINAL TO:
NJDEP
Community Right To Know Survey
CN 405
Trenton, NJ 08625-0405

* You are required to send copies of this survey to the agencies listed on Page 28 of the instruction guide. You must also keep a copy at your facility.

3 5 5 0 0 0 0 3 2 0 0 9

LIQUID CARBONIC CARBON DIOXIDE CORP.
 800 OF WOOD AVE SOUTH

PART 2

1994 CHEMICAL INVENTORY REPORT

Reporting Period: January 1 - December 31, 1994

Please type all responses.

Photocopy this page if you need additional forms.

Read instructions carefully before completing this form.

SUBSTANCE DESCRIPTION	HAZARDS (Check all that apply)	INVENTORY INFORMATION
Name: <u>CARBON DIOXIDE</u> Substance Number: _____ CAS Number: <u>124-38-9</u> DOT Number: <u>UN 2187</u> Pure (X) or Mixture () Solid () Liquid (X) Gas () Trade Secret: () Check if claiming	() Fire (X) Sudden release of pressure () Reactive (X) Acute health effects () Chronic health effects () None per MSDS	Container Type <u>OT</u> Max. daily inventory <u>16</u> Avg. daily inventory <u>14</u> Days on site <u>300</u> Storage pressure <u>02</u> Storage temperature <u>06</u>
Location(s) <u>IN TRAILERS ON PARKING LOT</u>		
Name: _____ Substance Number: _____ CAS Number: _____ DOT Number: _____ Pure () or Mixture () Solid () Liquid () Gas () Trade Secret: () Check if claiming	() Fire () Sudden release of pressure () Reactive () Acute health effects () Chronic health effects () None per MSDS	Container Type _____ Max. daily inventory _____ Avg. daily inventory _____ Days on site _____ Storage pressure _____ Storage temperature _____
Location(s) _____		
Name: _____ Substance Number: _____ CAS Number: _____ DOT Number: _____ Pure () or Mixture () Solid () Liquid () Gas () Trade Secret: () Check if claiming	() Fire () Sudden release of pressure () Reactive () Acute health effects () Chronic health effects () None per MSDS	Container Type _____ Max. daily inventory _____ Avg. daily inventory _____ Days on site _____ Storage pressure _____ Storage temperature _____
Location(s) _____		
Name: _____ Substance Number: _____ CAS Number: _____ DOT Number: _____ Pure () or Mixture () Solid () Liquid () Gas () Trade Secret: () Check if claiming	() Fire () Sudden release of pressure () Reactive () Acute health effects () Chronic health effects () None per MSDS	Container Type _____ Max. daily inventory _____ Avg. daily inventory _____ Days on site _____ Storage pressure _____ Storage temperature _____
Location(s) _____		
Name: _____ Substance Number: _____ CAS Number: _____ DOT Number: _____ Pure () or Mixture () Solid () Liquid () Gas () Trade Secret: () Check if claiming	() Fire () Sudden release of pressure () Reactive () Acute health effects () Chronic health effects () None per MSDS	Container Type _____ Max. daily inventory _____ Avg. daily inventory _____ Days on site _____ Storage pressure _____ Storage temperature _____
Location(s) _____		

INVENTORY RANGE CODES¹

20	Greater than 10 million pounds
19	1,000,001 to 10 million pounds
18	500,001 to 1 million pounds
17	250,001 to 500,000 pounds
16	100,001 to 250,000 pounds
15	50,001 to 100,000 pounds
14	10,001 to 50,000 pounds
13	1,001 to 10,000 pounds
12	101 to 1,000 pounds
11	11 to 100 pounds
10	1 to 10 pounds
09	Less than 1 pound

CONTAINER CODES AND DESCRIPTIONS

TA	Above ground tank	BA	Bag
TB	Below ground tank	BX	Box
TI	Tank inside building	CY	Cylinder
DS	Steel drum	BG	Bottles or jugs (glass)
DP	Plastic drum	BP	Bottles or jugs (plastic)
DF	Fiber drum	BN	Tote bin
CN	Can	TW	Tank Wagon
CB	Carboy	RC	Railcar
SI	Silo	OT	Other (Describe)

STORAGE TEMPERATURE AND PRESSURE CODES

Pressure	01	Ambient pressure
	02	Greater than ambient pressure
	03	Less than ambient pressure
Temperature	04	Ambient temperature
	05	Greater than ambient temperature
	06	Less than ambient temperature but not cryogenic (freezing conditions)
	07	Cryogenic conditions (less than -200°C)

¹NOTE: Please see pages 14 thru 16 for gallon and cubic feet conversion factors.

*Ambient means "normal," "surrounding," or "room" conditions.

ted



Praxair, Inc.
Industrial Avenue
P. O. Box 237
Keasbey, NJ 08832
Tel (908) 738-4000
Fax (908) 738-9586

September 11, 1996

Shirlee Schiffman, Chief
Bureau of Chemical Release Information
and Prevention
New Jersey Department Of Environmental Protection
CN-405
Trenton, NJ 08625-0405

Re: 1995 R-T-K Survey, Liquid Carbonic Corporation, Foot of Wood Ave. Linden, NJ

Dear Ms. Schiffman,

This is in response to a Notice Of Violation issued on August 14, 1996 to Robert Brown, Liquid Carbonic Industries, in Burlington, NJ, regarding the failure to file the 1995 Community Right To Know survey for the former Liquid Carbonic facility at the Foot of Wood Ave in Linden NJ.

I am responding for Liquid Carbonic because Praxair, Inc. had purchased 100% of the stock of CBI Industries in January 1996. CBI Industries was the parent company of Liquid Carbonic. As a result of the acquisition of CBI Industries, Praxair has assumed ownership of Liquid Carbonic.

Liquid Carbonic had ceased activity at the Linden facility in October 1994. These activities consisted of a rental agreement with LCP, the owner of the property, for office space and a parking area for trailers which would at times contain product. No industrial activities had taken place on the property during Liquid Carbonic's tenancy.

Liquid Carbonic had no presence on the site in 1995. This is the reason that the 1995 Community Right To Know survey was not completed or submitted to the Department.

I trust that this explanation is sufficient to respond to the Notice Of Violation and request that it also serve to notify the Department of the termination of activities at the site under the New Jersey Worker and Community Right To Know Act. Please let me know if there are further filing or notification requirements to comply with the Notice Of Violation or the Act to remove this location from the list of reporting facilities. I can be reached at 908-738-4000 ext. 200, or at the above address.

Very truly yours,

A handwritten signature in dark ink, appearing to read "N. DiFranco", written over a horizontal line.

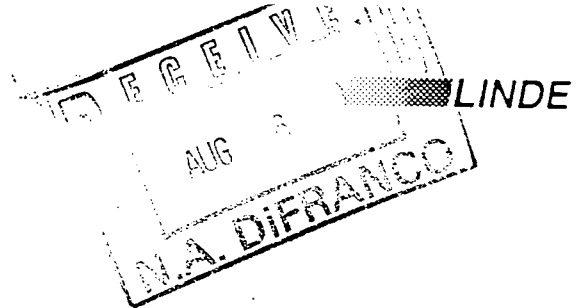
Nicholas A. DiFranco
Manager, Environmental Affairs

cc: Robert Brown
Irma Simon

LINDE GASES

OF THE
MID-ATLANTIC, INC. RECEIVED
308 Harper Drive
Moorestown, NJ 08057
(609) 778-6200
AUG -6 1990

UNION CARBIDE CORP.
SOMERSET REGION OFFICE
SOMERSET, NJ



August 3, 1990

Mr. A. Kaczoroski, Assistant Director
NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
Division of Solid Waste Management
840 Bear Cavern Road
CN 414
Trenton, NJ 08625

SUBJECT: ASBESTOS DISPOSAL NOTIFICATION

Dear Mr. Kaczoroski:

This letter serves as formal notification to you of Linde Gases of The Mid-Atlantic, Inc.'s. intention to dispose of approximately 0.5 cubic yards of transite board material from our facility located at the foot of South Wood Avenue in Linden, New Jersey. The material is in a non-friable state and can be characterized as 2'x2' transite panels.

Prior to removal from our facility this material will be wetted and plasticized. It will then be transported by National Waste Disposal, Inc. (NJ DEP. No. 7006/EPA ID No. NJ D 096839154) to the Pottstown Landfill located on Sell Road in Pottstown, PA. (telephone No. (215) 327-2703).

GAS TECHNICS
5 Iron Horse Road
Oakland, NJ 07436
(201) 337-7003

LINDE GASES OF BALTIMORE
1400 Benson Court
Baltimore, MD 21227
(301) 242-0345

BELCO
5303 46th Avenue
Hyattsville, MD 20781
(301) 779-6300

HAMPTON ROADS WELDERS SUPPLY
3450 Virginia Beach Boulevard
Norfolk, VA 23502
(804) 380-8405

GAS TECHNICS
2300 East Church Street
Philadelphia, PA 19124
(215) 533-1722

Our schedule for the above mentioned activities calls for the packaging of the material to occur on August 3, 1990 and the hauling of the material to the aforementioned landfill by August 7, 1990. Should you have any questions and or require additional information, please contact me either at the address on the letterhead or telephone (609) 778-6277. In closing, I also want to thank you for taking the time to thoroughly discuss this matter with me yesterday. Your advisements are greatly appreciated.

Very truly yours,

A handwritten signature in dark ink, appearing to read "R.A. O'Neal", followed by a long horizontal line extending to the right.

R.A. O'Neal
TECHNICAL SUPERVISOR

RAON/amr

CC: N.A. DiFranco
J. Nastasi



Union Carbide Corporation
Linde Division
308 Harper Drive, Caller Service 13
Moorestown, New Jersey 08057
Telephone (609) 778-6200

RECEIVED

MAR 11 1988

UNION CARBIDE CORP.
SOMERSET REGION OFFICE
CONVENT

February 10, 1988

Leah J. Webb
International Technology, Corporation
165 Fieldcrest Avenue
Edison, NJ 08818

RECEIVED

MAR 11 1988

MAR 11 1988

Dear Ms. Webb:

Enclosed are the results of the EP TOX metals analysis performed on the soil composite taken from our Linden facility. Hopefully the results will be more acceptable to the Fondessey representatives than the previously submitted dated report.

I trust you will now be able to proceed with the removal and shipment of the roll-off containers still on-site at Linden. Should you encounter any additional snags or anticipate any further delays please notify me at the earliest opportunity. If I do not hear from you, I will assume the containers will be removed from the Linden site within the next 2-3 weeks.

Very truly yours,

UNION CARBIDE CORPORATION
Linde Division

R. A. O'Neal
Region Technical Supervisor
Packaged Industrial Gases

RAO:sc
C10288

cc: N. A. DiFranco
A. A. Galvan

Enclosure

RECEIVED
MAR -3 1988

Gollob Analytical Service

MOLININI/GOLLOB (A DIVISION OF) ENSECO (INCORPORATED)

47 INDUSTRIAL ROAD, BERKELEY HEIGHTS, NEW JERSEY 07922 • TEL. (201) 464-3331

TO:

Mr. Randy O'Neil
Union Carbide Corp., Linde Div.
308 Harper Drive
Moorsetown, NJ 08057

G.A.S. REPORT No. 66107 (Formerly #65959/
65959A)
Date Requested: 2/12/88
Date Reported: 2/29/88
P.O. No. 8833027842/22/88

MATERIAL SUBMITTED.

1 (One) Soil Composite

INFORMATION REQUESTED:

Atomic Absorption Analysis

NOTEBOOK REFERENCE:

LM 1322, Pg. 45

RESULT OF INVESTIGATION

Subject sample designated "Jar #9" has been analyzed for
EP Tox Metals as requested.

All data are presented in the table below:

<u>Constituents</u>	<u>milligrams/liter</u>
Arsenic	0.04
Barium	ND 0.1
Cadmium	0.02
Chromium	ND 0.01
Lead	ND 0.1
Selenium	ND 0.002
Silver	ND 0.01

ND=None detected, less than

n3288

By


GOLLOB ANALYTICAL SERVICE

Gollob Analytical Service

MOLININI/GOLLOB (A DIVISION OF) ENSECO (INCORPORATED)

47 INDUSTRIAL ROAD, BERKELEY HEIGHTS, NEW JERSEY 07922 • TEL. (201) 464-3331

RECEIVED
FEB 23 1988

TO:

Mr. R. O'Neil
Union Carbide Corp. Linde Div.
308 Harper Drive
Moorestown, NJ 08057

G.A.S. REPORT No. 66009
Date Requested: 2/3/88
Date Reported: 2/22/88
P.O. No. 8833027842/22/88

MATERIAL SUBMITTED:

1 (One) Soil Sample - Jar #4

INFORMATION REQUESTED:

Infrared & Atomic Absorption Analyses

NOTEBOOK REFERENCE:

IR RB 1345 page 12 & 13

RESULT OF INVESTIGATION

Subject sample has been analyzed for the constituents requested and results are presented in the following table.

Constituents

milligrams/liter

E.P. Toxicity Leachate

Mercury

ND 0.001

micrograms/gram

Petroleum Hydrocarbons

600

ND=none detected, less than

Results reported by phone 2/24/88.

t 22488

By Henry A. D'Allesandro *gpm*
GOLLOB ANALYTICAL SERVICE



INTERNAL
CORRESPONDENCE

RECEIVED

RECEIVED

MAR 11 1988

MAR 11 1988

UNION CARBIDE CORP.
SOMERSET REGION OFFICE

308 Harper Drive, Caller Service 13, Moorestown, New Jersey 08057

To
N. A. DiFranco
Somerset

Date

March 10, 1988

Originating Dept.

Packaged Industrial Gases

Copy to
A. A. Galvan

Subject

**LINDEN CLEAN-UP
ANALYSES RESULTS**

Nick:

Attached are the results from Gollob Analytical Service for the analyses performed in connection with the Linden plant clean-up.

Fred Galvan wants to have the discussion relative to our approach to the New Jersey State Department of Environmental Protection, however, he wanted to wait until all the necessary testing at Linden had been performed and the analyses were in-house.

Please respond to Fred on when your schedule will permit further discussion of this matter.

R. A. O'Neal

RAO:sc
C10388

Attachments

Gollob Analytical Service

MOLININI/GOLLOB (A DIVISION OF) ENSECO (INCORPORATED)

47 INDUSTRIAL ROAD, BERKELEY HEIGHTS, NEW JERSEY 07922 • TEL. (201) 464-3331

RECEIVED
MAR - 3 1988

TO:

Mr. R. O'Neal
Union Carbide Linde Division
308 Harper Drive
Moorestown, NJ 08057

G.A.S. REPORT No. 65994A
Date Requested: 2/1/88
Date Reported: 3/1/88
P.O. No. 852L10493Z

MATERIAL SUBMITTED:

2 (Two) Samples (1 Water-Oil Mixture; 1 Heavy Oil
Project 905-1)

INFORMATION REQUESTED:

Infrared Analysis

NOTEBOOK REFERENCE:

LM 1322, Pg. 33

RESULT OF INVESTIGATION

This investigation was undertaken to determine if the oil from the waste oil storage tank is present in the water removed from the dry well at Linden.

Subject samples, received at G.A.S. on 2/1/88, have been analyzed by infrared.

Results of the Investigation

Infrared analysis revealed the presence of oily material in the water sample. The spectra produced by the waste oil and the material extracted from the water are similar. However, the source of the oily material in the water is not certain.

n3388

By


GOLLOB ANALYTICAL SERVICE

RECEIVED
MAR 1 1988
RECEIVED
MAR 10 1988

Gollob Analytical Service

MOLININI/GOLLOB (A DIVISION OF) ENSECO (INCORPORATED)

47 INDUSTRIAL ROAD, BERKELEY HEIGHTS, NEW JERSEY 07922 • TEL. (201) 464 3331

TO: Mr. R. O'Neill
Union Carbide Linde Division
308 Harper Drive
Moorestown, NJ 08057

G.A.S. REPORT No. 659948

Date Requested: 2/1/88
Date Reported: 3/1/88
P.O. No. 852L10493Z

MATERIAL SUBMITTED: 2 (Two) Samples (1 Water-Oil Mixture; 1 Heavy Oil)
Project 905-1

INFORMATION REQUESTED: Gas Chromatography Analysis

NOTEBOOK REFERENCE: WV 1252, Pg. 80

RESULT OF INVESTIGATION

This investigation was undertaken to determine if the oil from the waste oil storage tank is present in the water removed from the dry well at Linden.

Analyzed by Capillary Gas Chromatography (Flame Ionization Detector)

Results of the Investigation

Gas chromatography analysis revealed the presence of kerosene and/or fuel oil #2 in the liquid floating on top of the water sample.

No chromatogram or fingerprint was produced by the waste oil storage sample because of its high boiling characteristics.

Procedure

The oily slick on the surface of the water was removed with a solvent and an aliquot injected onto a 30m x .23mm FS column temperature programmed from 70-300°C at 50°/minute.

A known amount of the oil sample was dissolved in the same solvent and an aliquot of the mix analyzed under the same conditions as the water sample.

Note: The water sample had a kerosene type odor. No foreign odor was detected in the oil sample.

n3488

By


GOLLOB ANALYTICAL SERVICE

Gollob Analytical Service

MOLININI/GOLLOB (A DIVISION OF) ENSECO (INCORPORATED)

47 INDUSTRIAL ROAD, BERKELEY HEIGHTS, NEW JERSEY 07922 • TEL. (201) 464-3331

TO:

Mr. S. Hickes
Union Carbide Corporation-Linde Division
Foot of S. Wood Avenue
Linden, NJ 07036

G.A.S. REPORT No. 65959

Date Requested: 1/27/88

Date Reported: 1/29/88

P.O. No. 883-302784

MATERIAL SUBMITTED:

1 (One) Soil Sample

INFORMATION REQUESTED:

Infrared & Atomic Absorption Analyses

NOTEBOOK REFERENCE:

RESULT OF INVESTIGATION

CM 1348 page 47, IR 1345 page 8

Subject sample has been analyzed by flameless atomic absorption for total mercury and by infrared spectroscopy for total petroleum hydrocarbons.

All data are presented in the following table.

<u>Constituents:</u>	<u>Total Petroleum</u> <u>Hydrocarbons</u> <u>milligrams/killogram</u>	<u>Mercury, Inorganic</u> <u>& Organic</u>
<u>Sample Identity</u>		
Linden HZ Project 905-1	1150	21
Rear storage building		
4 point composite		
Union Carbide Linden 1/27/88		

Note: All results are based on dry weight of soil.

t 12988

By

GOLLOB ANALYTICAL SERVICE

UNION CARBIDE CORPORATION
Linde Division

RECEIVED 308 Harper Drive
Moorestown, New Jersey 08057
AUG 10 1988 Packaged Industrial Gases

To: Linda Weldon
Investment Recovery Dept.
S. Charleston, W. VA

UNION CARBIDE CORP.
SOMERSET REGION
Date: August 4, 1988

Subj: LINDEN PLANT
OIL CONTAMINATED
SOIL CLEAN-UP

cc: N. A. DiFranco
A. A. Galvan

Dear Ms. Weldon:

Consistent with our telephone discussion of 8/1/88 relative to the subject, I am hereby forwarding copies of New Jersey Uniform Hazardous Waste Manifest(s) # NJA 0421321, NJA 0421320, NJA 0421353, NJA 0421352, NJA 0421354 and NJA 0421357.

As reflected on the documents, this waste material was transported by American Industrial Marine to the disposal facility located in Oregon, Ohio. International Technology Corporation (IT, Corp.) served as the contractor for the clean-up. According to my records IT's crew left the site on 2/3/88 and the final roll-off dumpster containing the oil contaminated soil was removed on 6/6/88.

Should you have further questions or require additional information please call me at (609) 778-6338.


R. A. O'Neal

RAO:sc
RAO09.DEL

Enclosures



Union Carbide Corporation
Linde Division
308 Harper Drive, Caller Service 13
Moorestown, New Jersey 08057
Telephone (609) 778-6200

August 4, 1988

State of New Jersey
Department of Environmental Protection
Division of Hazardous Waste Management
Manifest Section
CN 028
Trenton, NJ 08625

Dear Sirs:

Enclosed are the Generator State copies of the Uniform Hazardous Waste manifest(s) reflecting shipments of oil contaminated soil. The respective dates of the shipments and manifest document numbers are as follows:

<u>DATE</u>	<u>STATE MANIFEST DOCUMENT NO.</u>
5/18/88	NJA 0421321
5/18/88	NJA 0421320
5/20/88	NJA 0421353
5/20/88	NJA 0421352
5/24/88	NJA 0421354
6/06/88	NJA 0421357

Should you have questions and or require additional information please contact me. I have enclosed my card for your convenience and use.

Very truly yours,

UNION CARBIDE CORPORATION
Linde Division

R. A. O'Neal
Region Technical Supervisor
Packaged Gases & Distributors

RAO:sc
RA008.DEL

Enclosures

cc: Y. Bashir
N. A. DiFranco
A. A. Galvan



Union Carbide Corporation
Linde Division
308 Harper Drive, Caller Service 13
Moorestown, New Jersey 08057
Telephone (609) 778-6200

August 4, 1988

State of New Jersey
Department of Environmental Protection
Division of Hazardous Waste Management
Manifest Section
CN 028
Trenton, NJ 08625

Dear Sirs:


Enclosed are Hazardous Waste Manifests which correspond to shipments of hazardous waste on the indicated dates. The waste material was generated by our facility located in Linden, NJ (NJ011392735).

<u>DATE</u>	<u>STATE MANIFEST DOCUMENT NO.</u>
7/22/88	NY A 755901 9
6/28/88	NY A 755967 6
6/28/88	NY A 755968 5
6/28/88	NY A 755902 8

Should you require any additional information, please contact me at your earliest opportunity. I have enclosed my card for your convenience and use.

Very truly yours,

UNION CARBIDE CORPORATION
Linde Division


R. A. O'Neal
Region Technical Supervisor
Packaged Gases & Distributors

RAO:sc
RA007.DEL

Enclosures

cc: Y Bashir
N. A. DiFranco
A. A. Galvan



Union Carbide Corporation
Linde Division
308 Harper Drive, Caller Service 13
Moorestown, New Jersey 08057
Telephone (609) 778-6200

August 4, 1988

NYS DEC-Division of Hazardous Substances Regulations
Manifest Section
Post Office Box 12820
Albany, NY 12212
Attn: Lawrence J. Nadler, P. E.

Dear Mr. Nadler:

Enclosed are Hazardous Waste Manifests which correspond to shipments of hazardous waste on the indicated dates.

<u>DATE</u>	<u>STATE MANIFEST DOCUMENT NO.</u>
7/22/88	NY A 755901 9
6/28/88	NY A 755967 6
6/28/88	NY A 755968 5
6/28/88	NY A 755902 8

Should you require any additional information, please contact me at your earliest opportunity.

Very truly yours,

UNION CARBIDE CORPORATION
Linde Division

R. A. O'Neal
Region Technical Supervisor
Packaged Gases & Distributors

RAO:sc
RAO03.DEL

Enclosures

cc: Y Bashir
N. A. DiFranco
A. A. Galvan



Union Carbide Corporation
Linde Division
308 Harper Drive, Caller Service13
Moorestown, New Jersey 08057
Telephone (609) 778-6200

August 4, 1988

State of New Jersey
Department of Environmental Protection
Division of Hazardous Waste Management
Manifest Section
CN 028
Trenton, NJ 08625

Dear Sirs:

Enclosed are the Generator Site copies of NY State Manifest Document Nos. NYA 755879 4, NYA 755878 5 and NYA 755882 1. These documents correspond to shipments made from our Linden, NJ facility (NJD011392735) on 6/20/88 and 7/11/88 respectively.

Very truly yours,

UNION CARBIDE CORPORATION
Linde Division

R. A. O'Neal
Region Technical Supervisor
Packaged Gases & Distributors

RAO:sc
RAO04.DEL

Enclosures

cc: Y. Bashir
N. A. DiFranco
A. A. Galvan



Union Carbide Corporation
Linde Division
308 Harper Drive, Caller Service 13
Moorestown, New Jersey 08057
Telephone (609) 778-6200

August 4, 1988

NYS DEC-Division of Hazardous Substances Regulation
Manifest Section
Post Office Box 12820
Albany, NY 12212
Attn: Lawrence J. Nadler, P.E.

Re: EPA ID NUMBER: NJD011392735
REFERENCE CODE NUMBER: 0

Dear Mr. Nadler:

I wish to acknowledge receipt of your correspondence dated 7/19/88 which requests the disposal state copy of the Hazardous Waste Manifest for a hazardous waste shipment on 6/20/88.

Enclosed are Disposer State copies of the state manifest document(s) numbered NYA 755882 1, NYA 755879 4, and NYA 755878 5 attesting the the 6/20/88 shipments and a shipment on 7/11/88.

Should you require any additional information relative to this matter please call. I have enclosed my card for your convenience and use.

Very truly yours,

UNION CARBIDE CORPORATION
Linde Division

R. A. O'Neal
Region Technical Supervisor
Packaged Gases & Distributors

RAO:sc
RA006.DEL

Enclosures

cc: Y. Bashir
N. A. DiFranco
A. A. Galvan



Union Carbide Corporation
Linde Division
308 Harper Drive, Caller Service 13
Moorestown, New Jersey 08057
Telephone (609) 778-6200

August 4, 1988

Ohio Environmental Protection Agency
Post Box 1049
1800 Watermark Street
Columbus, Ohio 43266-0149
Attn: Division of Hazardous Material Management
Permit & Manifest Records Section

Dear Sirs:


Enclosed are Hazardous Waste Manifest which correspond to shipments of non-RCRA regulated waste to the facility operated by Enviro Safe Services of Ohio, Inc.. These materials were generated by our Linden, NJ facility (NJD011392735).

<u>DATE</u>	<u>MANIFEST DOCUMENT NUMBER</u>
5/18/88	NJA 0421321
	NJA 0421320
5/20/88	NJA 0421352
	NJA 0421353
5/24/88	NJA 0421354
	NJA 0421357

Should you require any additional information please contact me.
I have enclosed my card for your convenience.

Very truly yours,

UNION CARBIDE CORPORATION
Linde Division


R. A. O'Neal
Region Technical Supervisor
Packaged Gases & Distributors

RAO:sc
RAO05.DEL

Enclosures

cc: Y. Bashir
N. A. DiFranco
A. A. Galvan



PACKAGED
GASES
NATIONAL OFFICE

UNION CARBIDE CORPORATION
LINDE DIVISION
NATIONAL PACKAGED GASES OFFICE
P.O. BOX 6744, 200 COTTONTAIL LANE
SOMERSET, NEW JERSEY 08875-6744

December 23, 1987

Certified Mail

Mr. E. L. Davis
New Jersey Department of Environmental Protection
Hazardous Waste Management
2 Babcock Place
West Orange, NJ 07052

SUBJECT: UNION CARBIDE CORPORATION - LINDE DIVISION
SOUTH WOOD AVENUE, LINDEN, NJ - NOTICE OF VIOLATION

Dear Mr. Davis:

This letter is in response to the Notice of Violation (NJSA 58:10-23.11(c) Discharge of a hazardous substance, hydrogen carbon) issued by you to Mr. A. Galvan, during your inspection on December 1, 1987 of the subject facility. Per our telephone conversation on December 18, we appreciate having these extra days to respond during the busy holiday season.

Your inspection was prompted by Mr. Galvan's telephone report of October 14, 1987 to the New Jersey DEP concerning the presence of oil in a soil sample which Linde desires to remove. This oil spill is in the vicinity of the concrete pad on which the Plants' oil collection system is located. The Notice of Violation requires that we indicate to you what corrective measures we are taking to clean up this material.

We have already contracted with IT Corporation located in Edison, New Jersey to perform the removal activity of this material whose preliminary analyses indicate that PCB's are non-detectable and that traces of mercury are present up to 16 ppm.

Our proposed action is as follows: IT Corporation will excavate the area of the spill to include an approximate one foot buffer in all directions beyond visible traces of oil contamination. The excavated soil will be loaded onto bulk trailers and disposed of at the permitted Envirosafe of Ohio hazardous waste disposal facility located in Fondessy, Ohio.

Upon completion of the excavation a composite soil sample taken from at least four sampling points will be analyzed for total hydrocarbons and heavy metals to confirm completeness of the remedial work. The area will be backfilled with clean soil and gravel.

Page 2

SUBJECT: UNION CARBIDE CORPORATION - LINDE DIVISION
SOUTH WOOD AVENUE, LINDEN, NJ - NOTICE OF VIOLATION
December 23, 1987

We are in the process of obtaining the necessary internal approvals and coordinating the work schedules with both IT Corporation and Envirosafe. We anticipate this work to be completed before January 31, 1988. As soon as a firm date is obtained for this work we will advise you so that you may coordinate inspection activities with the site remediation.

We trust that the above satisfactorily outlines the removal activity planned for this site. Should you have any question or wish to discuss this matter further, you may contact me at the above address or contact Mr. A. Galvan at: 609-778-6277.

Very truly yours,



N. A. DiFranco
Manager,
Environment & Health

cc: Mr. J. R. Crane
Mr. A. A. Galvan

bcc: Mr. L. E. Barron
Mr. T. E. DeBriac
Mr. R. G. Tisch



INTERNAL
CORRESPONDENCE

NAD

Package Gas Operations
Technology Center
P. O. Box 444, 100 Davidson Ave., Somerset, NJ 08873

To
A. A. Galvan
Moorestown

Date
December 3, 1987

Originating Dept.
Environment & Health

Copy to
L. E. Barron
T. E. DeBriac
V. A. Smith

Subject
LINDEN NEW JERSEY
DEP INSPECTION

On December 1, 1987, Mr. Eddie L. Davis of the New Jersey DEP visited the Linden plant for the purpose of conducting an inspection of the oil spill behind the plant. Mr. Davis had called your office earlier that day announcing his arrival and in turn you called me. I was able to be at the plant to escort Mr. Davis.

Mr. Davis asked to see the area of the spill and then asked how the oil got there. I explained that the plant had collected oil from the oily water separator into drums which over a period of time leaked and spilled onto the soil. I indicated that this practice had been stopped a few years ago and that a recycler now collects the oil directly from the separator.

Mr. Davis asked where the oil came from and I explained how it is used in the hydrogen compressors. He then asked why we're reporting the spill now. I explained that in our review of state regulations, we recently became aware of the necessity of making the agency aware of old spills. As a result, we were compelled to notify the NJ DEP of the existence of the spill even though it most likely predated the regulations. He was satisfied with that explanation.

He then asked what we were doing about cleanup. I explained that IT Corporation has been contracted to excavate and remove the contaminated soil. He requested that as soon as we became aware of their timetable for cleanup, we contact the DEP so that an inspector may come out to witness the cleanup.

Upon leaving, Mr. Davis left a Notice of Violation, copy attached, citing only the fact that a spill occurred with no mention of "late reporting". He noted that the soil must be classified if it is being disposed of in New Jersey, I indicated that it would be taken out of state for disposal.

Page 2
LINDEN NJ - DEP INSPECTION
December 3, 1987

Classification is the testing of the soil to determine its hazardous nature.

Under this Notice of Violation we have 15 days in when to respond to Mr. Davis as to the remedial action we are taking.

At no time during the inspection was there any mention of mercury by Mr. Davis or me.

I will contact you regarding the wording of a response to Mr. Davis.


N. A. DiFranco

NAD:jl
(1018)

/Att.

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE MANAGEMENT
5th Fl., 401 E. State St., Trenton, N.J. 08625

NOTICE OF VIOLATION

ID NO. _____

DATE 12/01/87

NAME OF FACILITY Union Carbide Linden Hydrogen Pump Facility

LOCATION OF FACILITY South Wood Ave Linden N.J.

NAME OF OPERATOR Mr. Galvan

You are hereby NOTIFIED that during my inspection of your facility on the above date, the following violation(s) of the Solid Waste Management Act, (N.J.S.A. 13:1E-1 et seq.) and Regulations (N.J.A.C. 7:26-1 et seq.) promulgated thereunder and/or the Spill Compensation and Control Act, (N.J.S.A. 58:10-23.11 et seq.) and Regulations (N.J.A.C. 7:1E-1 et seq.) promulgated thereunder were observed. These violation(s) have been recorded as part of the permanent enforcement history of your facility.

DESCRIPTION OF VIOLATION N.J.S.A. 58:10-23.11(c) Discharge
of a hazardous substance (Hydrogen Carbon)

Remedial action should include the excavation
of contaminated soils, soil classification, testing for
Total Petroleum Hydrocarbons & PCBs and proper disposal
of contaminated soil.

Remedial action to correct these violations must be initiated immediately and be completed by

_____. Within fifteen (15) days of receipt of this Notice of Violation, you shall submit in writing, to the investigator issuing this notice at the above address, the corrective measures you have taken to attain compliance. The issuance of this document serves as notice to you that a violation has occurred and does not preclude the State of New Jersey, or any of its agencies from initiating further administrative or legal action, or from assessing penalties, with respect to this or other violations. Violations of these regulations are punishable by penalties of \$25,000 per violation.

Robert J. Davis
Investigator, Division of Waste Management
Department of Environmental Protection
(201) 669-3960

RIGHT OF ENTRY AGREEMENT

THIS AGREEMENT is made this 29 day of ^{February} ~~January~~, 1993, by ~~LCP Chemicals & Plastics, Inc.~~ ^{LCP Chemicals, A Division of Haulin Group, Inc.}, having an address at Foot of South Wood Avenue, P.O. Box 444, Linden, New Jersey 07036 ("GRANTOR") and Praxair, Inc. ("GRANTEE").

WITNESSETH

GRANTOR does hereby grant to GRANTEE and its agents, designees, contractors and those entities undertaking remedial and/or investigatory action under the auspices or direction of GRANTEE with respect to the lands owned by the GRANTOR located at Linde Avenue, City of Linden, County of Union, New Jersey, the right to enter, from time to time, onto said lands to conduct activities pursuant to the authority of the Environmental Cleanup Responsibility Act, N.J.S.A. 13:1K-6 et seq. ("ECRA"). Such activities may be conducted, operated or maintained by GRANTEE, its agents, designees, contractors and those entities undertaking remedial and/or investigatory action under its auspices or direction until such time such remedial and/or investigatory action has been completed. GRANTEE agrees to provide to GRANTOR copies of any remedial and/or investigatory reports required to be prepared for said lands pursuant to

ECRA. ^{all} ~~Grantee~~ ^{grantee} agrees to provide ~~Grantor~~ ^{grantee} reasonable notice of its intention enter ~~The aforementioned land in Linden, NJ~~ ^{the aforementioned land in Linden, NJ} x ~~Grantee~~ ^{grantee} reserves the right to reschedule any of ~~Grantee's~~ ^{grantee's} activities which may interfere with ~~Grantor's~~ ^{grantee's} operations in ~~Linden, NJ~~ ^{Linden, NJ} x

GRANTOR acknowledges that it has received one dollar (\$1.00) and other good and sufficient consideration in return for granting the rights of access and maintenance set forth in the above paragraph.

RCV BY: XEROX TELECOPIER 7011 ; 2-23-93 3:13PM ;
SENT BY: LCP CHEMICALS ; 2-23-93 4:17PM ;

3048431002+

8303: # 3

3048431002+

8303: # 3

GRANTOR and GRANTEE each represents that its signatory to this Agreement has
GRANTEE WFO
authority to bind GRANTOR and ~~GRANTOR~~ to the terms of this Agreement.

This Agreement shall take effect on the date executed by GRANTOR.

GRANTOR
By: [Signature]
Title: EVP + Genl Mgr.
Date: 2/25/93

GRANTEE
By: [Signature] ^{42k}
Title: VICE PRESIDENT
Date: _____

PRAXAIR, INC.
39 Old Ridgebury Road
Danbury, CT 06810-5113

January 21, 1993

Mr. Randall W. Hansen
Executive Vice President
LCP Chemicals & Plastics, Inc.
P.O. Box 484
Linden, NJ 07036

Re: **Applicability of the New Jersey Environmental Cleanup
Responsibility Act to the Former Leasehold Between LCP
Chemicals and Linde Gases of the Mid-Atlantic, Inc.**

Dear Mr. Hansen:

On the advice of Mr. J. F. Merle I have written this letter to address an issue of mutual concern. Until August 30, 1990, Linde Gases of the Mid-Atlantic, Inc. (LGMA), a wholly owned subsidiary of Union Carbide Industrial Gases Inc. (renamed in 1992 Praxair, Inc.), leased approximately two acres of property from LCP Chemicals & Plastics. (LCP) at South Wood Avenue in Linden, N.J. LGMA engaged in compressed gases repackaging operations at this location. In April 1989 LCP modified the size of the LGMA leasehold by letter amendment to the existing 1987 lease. The former 2.1 acre leasehold of LGMA became approximately one-half that size. The April 11, 1989 letter amendment also provided that "Landlord shall be solely and exclusively liable for (i) any claims...arising out of its use of the LCP Area, and (ii) complying with all Environmental Cleanup Responsibility Act...requirements...." I have enclosed a copy of the lease and this letter amendment for your information.

The immediate concern of this letter is to advise you that the state of New Jersey Department of Environmental Protection and Energy (DEPE) maintains that certain remedial work needs to be undertaken on LCP's property covering the former 2.1 acre leasehold. The DEPE contends that under the Environmental Cleanup Responsibility Act (ECRA), sections 7:26-1.5(b), 7:26B-1.6(a) and 7:26B-3.3, the termination of a lease of an industrial establishment triggers the applicability of ECRA to both landlord (in this case, LCP) and tenant (LGMA) and that both landlord and tenant are liable for compliance with the statute. To date, LGMA alone has incurred considerable expense to address these

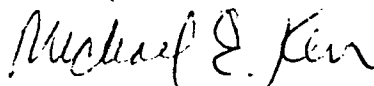
Mr. Randall W. Hansen
January 21, 1993
Page 2.

provisions of ECRA. One of the activities we have engaged in is the successful negotiation with DEPE of a limited scope of remediation work based on our research identifying pre-lease soil and groundwater conditions on or under the property. Most recently, as a result of our discussions, the DEPE has agreed that the remaining environmental issues concern only heavy metal contamination found in the fill material covering the site and arsenic in the groundwater below the property. Neither of these conditions relates to LGMA operations. DEPE appears willing to agree to the installation of an impermeable "cap" of asphalt on the property to address their soil and groundwater concerns. The "cap" would prevent surface water from entering the soil below and, thus, restrict groundwater transport of metals contamination.

Without addressing for now LCP'S responsibility to reimburse LGMA or Praxair, Inc. (Praxair) for LGMA's or Praxair's past or future costs to comply with ECRA, Praxair is willing to undertake the "cap" remediation and reduce the risk of enforcement by DEPE against LGMA, Praxair and LCP. The estimated "cap" construction costs are \$40,000-50,000. Since Praxair (or LGMA) has no legal interest in the property, we need authorization to enter LCP'S property and undertake this work. We request that LCP promptly grant this authorization so that both of us can avoid the risks of prosecution by DEPE for failure to implement a cleanup. I enclose for your review a proposed Right of Entry agreement authorizing Praxair to enter LCP property to implement the "cap" remediation under ECRA.

Since time is of the essence, I would appreciate your response to this letter as soon as possible. Please call me at 203-794-5893 if you have any questions.

Very truly yours,



Michael E. Kerr

Enclosures

cc: R. G. Tisch
N. A. DiFranco ✓
J. F. Merle
L. Arbegast, NJDEPE, CN-028, Trenton, NJ 08625-0028 (w/o encls)

LINDE GASES OF THE MID-ATLANTIC, INC.
308 Harper Drive
Moorestown, New Jersey 08057
609-778-6200

April 11, 1989

LCP Chemicals & Plastics, Inc.
Raritan Plaza II
Raritan Center
Edison, New Jersey 08818

Gentlemen:

now LCP Chemicals NJ, Division of Hanlin Group, Inc.
Reference is made to the Ground Lease dated as of May 1, 1987
(the "Lease") between LCP Chemicals & Plastics, Inc. ("Landlord")
and Union Carbide Industrial Gases, Inc., as successor to Union
Carbide Corporation ("Tenant"), for certain land situated in
Linden, New Jersey (the "Leased Land").

Landlord and Tenant hereby amend the Lease as follows:

1. The term shall be extended to expire on November 30, 1990; provided, however, that Tenant shall have the option to extend the term of the Lease for an additional period of two (2) years, commencing December 1, 1990 and terminating November 30, 1992, upon the same terms and conditions as set forth in the Lease, as modified herein, provided that Tenant gives written notice to Landlord of Tenant's exercise of said option not later than September 30, 1990.
2. Effective as of the date hereof, Tenant hereby grants to Landlord the exclusive use for truck parking and staging for adjacent terminaling operations of that part of the Leased Land as shown on Exhibit A attached hereto (the "LCP Area"), subject to the right of Tenant to use the LCP Area for pedestrian and vehicular access to the remainder of the Leased Land; provided, however, that Landlord shall be solely and exclusively liable for (i) any claims, damages, loss or liability arising out of its use of the LCP Area, and (ii) complying with all Environmental Cleanup Responsibility Act (N.J.S.A. 13:1K-G et seq.) requirements and regulations and other governmental requirements and compliance obligations due to its use of the LCP Area, including without limitation satisfying and discharging Tenant's obligations under Paragraph 8 of the Lease.
3. Upon the expiration or other termination of the Lease, Tenant shall have an additional period up to 180 days to remove any building, facilities, or equipment belonging to it from the Leased Land. Subject to Paragraph 17 of the lease.

LCP Chemicals & Plastics, Inc.
Page 2
April 11, 1989

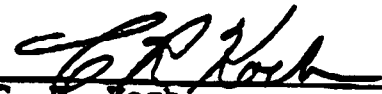
4. Upon the execution hereof, at its sole cost and expense, Tenant shall relocate certain fencing to the location as shown on Exhibit B attached hereto.

5. Except as otherwise set forth herein, the Lease shall remain in full force and effect.


If the foregoing is acceptable to you, kindly execute the duplicate of this letter in the space provided below and return the same to the undersigned.

Very truly yours,

UNION CARBIDE INDUSTRIAL
GASES, INC.


C. R. Koch
President
Linde Gases of the Mid-Atlantic

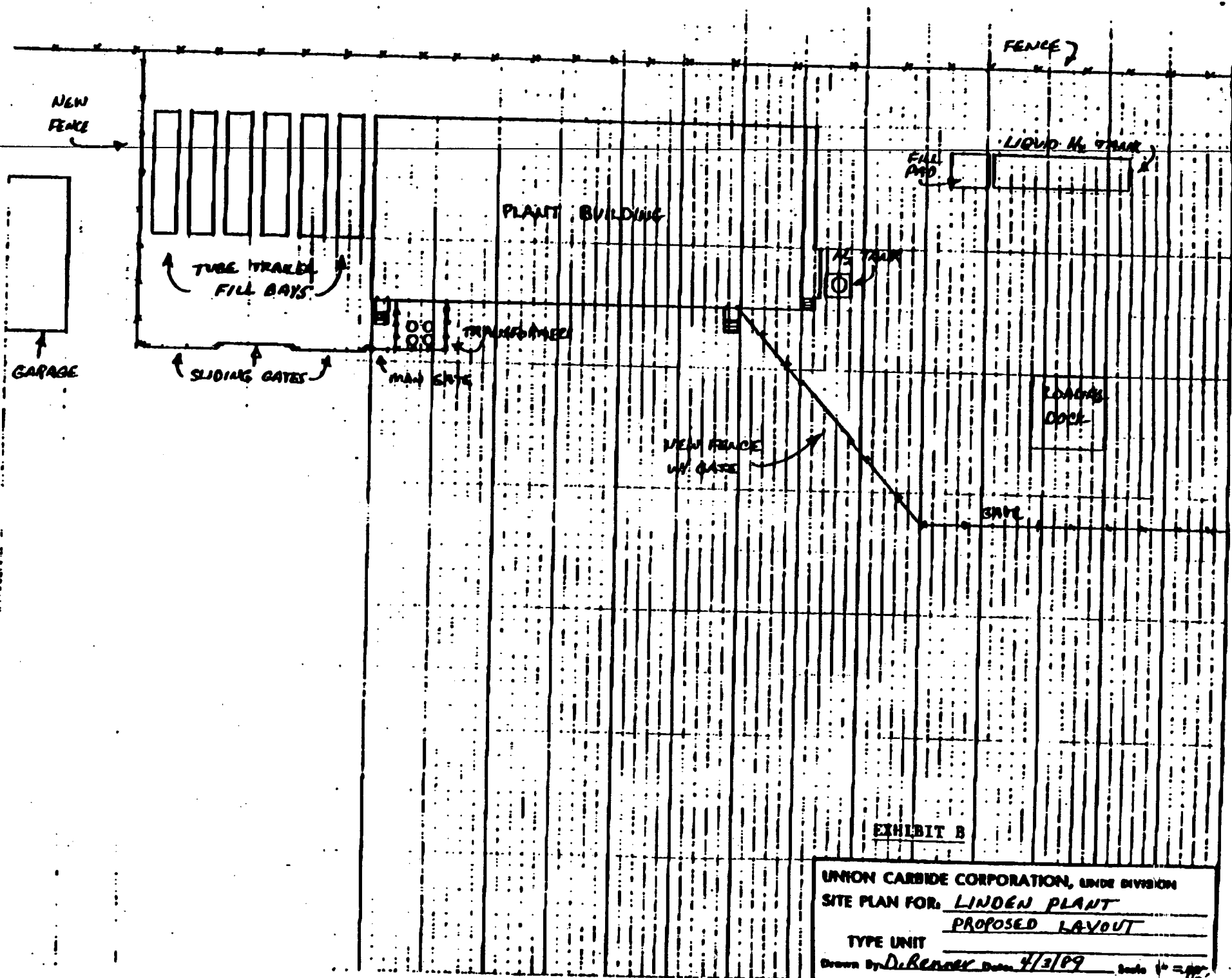
Agreed to and Accepted:

(formerly) LCP Chemicals NJ, Division of Hanlin Group, Inc. 
LCP CHEMICALS & PLASTICS, INC.

By 

Title Vice President

CRK:jge
041189.CRK



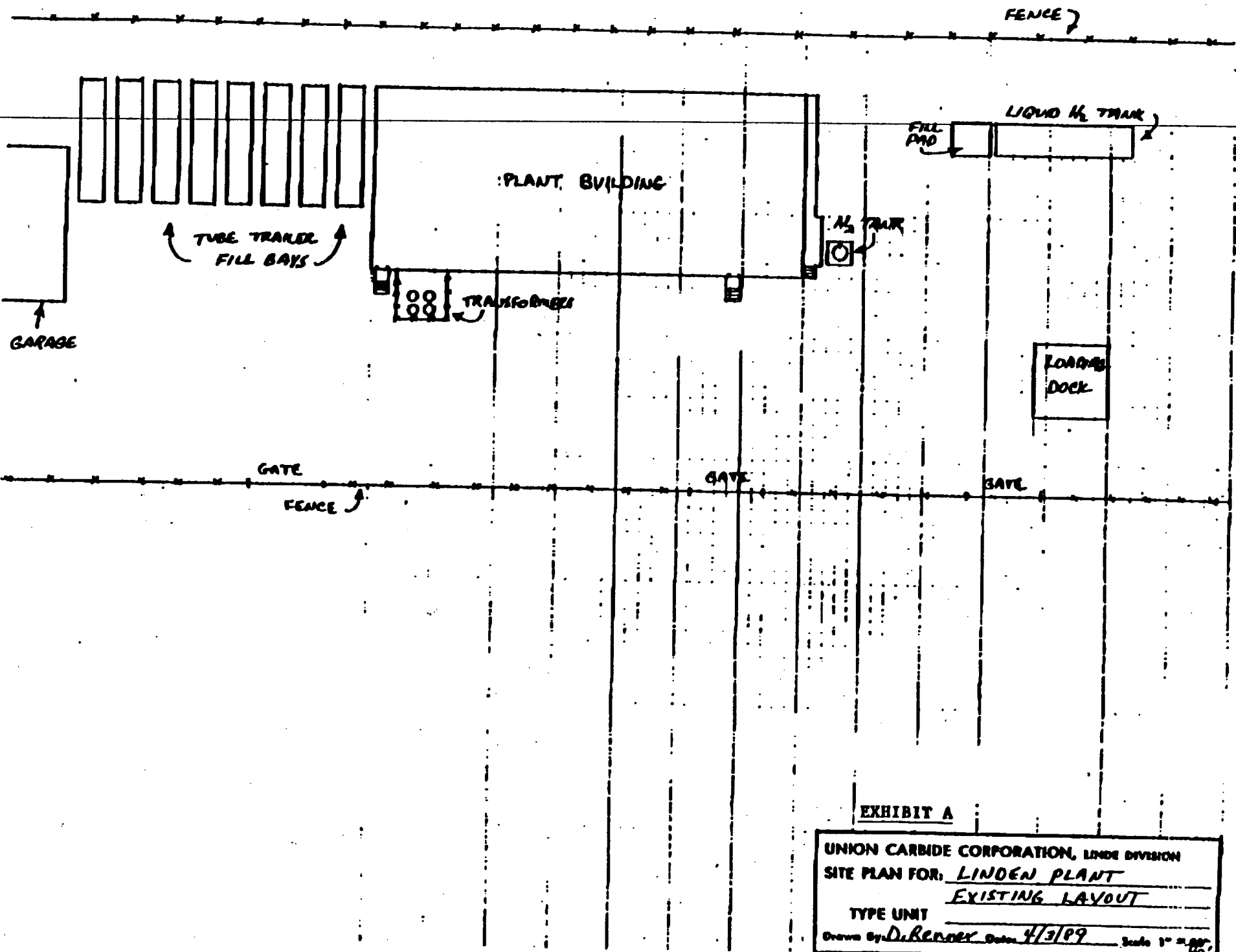


EXHIBIT A

UNION CARBIDE CORPORATION, LINDE DIVISION
SITE PLAN FOR: LINDEN PLANT
EXISTING LAYOUT
TYPE UNIT _____
Drawn by D. Renner Date 4/3/89 Scale 1" = 80'

RIGHT OF ENTRY AGREEMENT

THIS AGREEMENT is made this _____ day of January, 1993, by LCP Chemicals & Plastics, Inc., having an address at _____
_____ ("GRANTOR") and Praxair, Inc. ("GRANTEE").

WITNESSETH

GRANTOR does hereby grant to GRANTEE and its agents, designees, contractors and those entities undertaking remedial and/or investigatory action under the auspices or direction of GRANTEE with respect to the lands owned by the GRANTOR located at Linde Avenue, City of Linden, County of Union, New Jersey, the right to enter, from time to time, onto said lands to conduct activities pursuant to the authority of the Environmental Cleanup Responsibility Act, N.J.S.A. 13:1K-6 *et seq.* ("ECRA"). Such activities may be conducted, operated or maintained by GRANTEE, its agents, designees, contractors and those entities undertaking remedial and/or investigatory action under its auspices or direction until such time such remedial and/or investigatory action has been completed. GRANTEE agrees to provide to GRANTOR copies of any remedial and/or investigatory reports required to be prepared for said lands pursuant to ECRA.

GRANTOR acknowledges that it has received one dollar (\$1.00) and other good and sufficient consideration in return for granting the rights of access and maintenance set forth in the above paragraph.

GRANTOR and GRANTEE each represents that its signatory to this Agreement has authority to bind GRANTOR and GRANTOR to the terms of this Agreement.

This Agreement shall take effect on the date executed by GRANTOR.

GRANTOR

By: _____

Title: _____

Date: _____

GRANTEE

By: _____ *WEL*
9/27

Title: _____

Date: _____

GROUND LEASE

THIS LEASE, made as of the 1st day of May, 1987 between LCP CHEMICALS & PLASTICS, INC., a Delaware corporation, having an office located at Raritan Plaza II, Raritan Center, Box CN 3106, Edison, New Jersey 08818 (hereinafter referred to as "Landlord") and UNION CARBIDE CORPORATION, a New York Corporation, having an office at Old Ridgebury Road, Danbury, Connecticut 06817 (hereinafter referred to as "Tenant");

W I T N E S S E T H :

- - - - -

1. Landlord hereby leases unto Tenant and Tenant hires and takes from Landlord all that parcel of land situated along Linde Road in the City of Linden, County of Union, State of New Jersey, more particularly shown on Exhibit A attached hereto, being approximately 2.102 acres (hereinafter referred to as "Leased Land"), commencing on the effective date hereof and continuing for a period of two (2) years from such date. Rent shall be payable by Tenant to Landlord at monthly rate of Fifteen Hundred Dollars, (\$1,500.00) in advance on the first day of each month during the term hereof.

2. Tenant has, at its cost and expense, constructed on the Leased Land a building and facilities for the compressing, purifying repackaging and /or shipment of non-noxious gas and storage of same, including but not limited to hydrogen, Arygon, Oxygen, and blends. Tenant will make no structural alteration, changes or modifications in the building and facilities without the prior written approval of Landlord, which approval will not be unreasonably withheld. The building, facilities, equipment remain the property of Tenant and shall be deemed to be personal property although attached to the realty, subject, however, to all the other provisions of the Lease.

3. Tenant will use said building and facilities for the purpose of compressing, purifying, repackaging, and shipping of these compressed gases.

4. Tenant will obtain and maintain at its cost and expense, all approvals, licenses, permits and certificates required in connection with the use or operation of said buildings and facilities.

5. Throughout the term hereof Tenant will take good care of the Leased Land and at its own cost and expense will make as and when needed all repairs, whether such repairs are structural, ordinary or extraordinary, in and

about the Leased Land necessary to keep it in as good order and condition. Such repairs shall be, in quality and class, substantially equal to the original work and materials. Landlord may enter upon the Leased Land to inspect the premises during business hours. Tenant will keep the Leased Land clean and free of rubbish and refuse.

6. Tenant shall have the sole responsibility of maintaining the security of the buildings and facilities on the Leased Land and shall lock the buildings and gates during all periods when no personnel of Tenant are scheduled to be on duty. Landlord and Tenant shall arrange for Landlord's access to the property in the event of emergency during such absence of personnel.

7. Tenant will pay and discharge all mechanic liens, taxes and assessments for local improvements and payments of every nature and kind which may during the demised term be assessed, levied or imposed upon the Leased Land or any part thereof and the building and facilities located thereon. If Tenant fails to pay any such lien, tax or assessment when due, Landlord may pay the same including any interest or penalty and the same shall be come due and payable as additional rent on the first day of the month -

after Landlord makes such payment. Landlord shall pay or reimburse Tenant the portion of all taxes and assessments on the Leased Land which are based on the unimproved value of the land itself. In the event that the improvements on the Leased Land do not constitute a separate tax lot for which a separate tax bill is rendered but forms part of a larger tax lot, which includes other property owned by the Landlord, the amount of tax or assessment or other payment attributable to the improvements on the Leased Land shall be determined in a manner reflecting proportionate share of such tax or assessment represented by such improvements.

8. Tenant will promptly comply, at its cost and expense, with all laws, ordinances, regulations and requirements of Local, State and Federal Governments, and all agencies and subdivisions thereof, and of all other departments, bureaus, officials, boards and commissions with regard to the Leased Land or the use and operation thereof by Tenant. If any such law, ordinance, regulation or requirement shall not be promptly complied with by Tenant, then Landlord may, at its option, upon reasonable prior notice to Tenant, enter upon the Leased Land to comply therewith, and should any fine or penalty be imposed for failure to comply therewith, or cost be incurred by Landlord in complying therewith, Tenant agrees that Landlord may, at

its option, pay such fine or penalty or incur such cost, which Tenant agrees to repay to Landlord with interest from the date of payment, as additional rent on the first day of the month after Landlord has paid such fine or penalty.

9. Landlord will maintain and keep Linde Road in good repair and apportion the cost of maintenance and repair among all the users thereof, except Consolidated Rail Corporation, on a fair and equitable basis having due regard to the amount of use and tonnage hauled over Linde Road by each user. Tenant will pay its proportionate share of such cost, with Tenant's share not to exceed Five Thousand Dollars (\$5,000.00) in any one year, payable within ten (10) days after receipt of Landlord's invoice therefor. Landlord shall be entitled to bill annually, semi-annually or quarterly, at its option.

10. Landlord grants to Tenant the right to maintain at Tenant's cost and expense an iron pipe from the Leased Land to the existing ditch north of the Leased Land for the discharge of process water. The location of said pipeline is indicated on Exhibit A attached hereto. Tenant will maintain said pipeline and keep it in good repair at its own cost and expense and upon the termination of this Lease for any reason shall surrender the said pipeline to Landlord.

If use of said pipeline or ditch is prohibited by any governmental authority or the discharge violates governmental standards, Tenant will be required to make its own provision for disposal of process water.

11. Landlord grants permission to Tenant to install and maintain a railroad siding and switch at the locations indicated on Exhibit A at Tenant's expense. Tenant shall bear the full cost and expense of maintenance of the side-track switch. Tenant agrees to use said siding for, and only for, one liquid hydrogen car at any one time, but only during emergency periods when Landlord cannot supply hydrogen gas to Tenant. Tenant also agrees to give Landlord advance notice when it expects to bring in liquid hydrogen and to keep the liquid hydrogen car on the siding enclosed in a fenced-in area.

12. In consideration of the Landlord's weighing of the Tenant's liquid trailers, Tenant will pay Twenty Dollars (\$20.00) per weigh within ten (10) days after receipt of Landlord's invoice therefor.

13. Tenant has constructed at Tenant's cost and expense a fence enclosing the Leased Land, and Tenant will not permit its employees, guests, agents, invitees, or licensees at any time to enter upon Landlord's property (other than the Leased Land and Linde Road marked on Exhibit

A) without first obtaining the consent of the Landlord. If any such persons do enter upon landlord's property, with or without Landlord's consent, Tenant will forever indemnify and save harmless Landlord from and against all liability, penalties, damages, expenses and judgments arising from injury or loss of life during the term hereof to any such persons and will forever indemnify Landlord for any damage to Landlord's property caused by any such persons while on Landlord's property.

14. Tenant will forever indemnify and save harmless Landlord from and against any and all liability, penalties, damages, expenses and judgments arising from (a) personal injury to or loss of life of third parties, (b) damage to property of third parties during the term hereof of any nature, sustained in or about the Leased Land, and (c) and matter or thing growing out of the occupation and use of the Leased Land and asserted against Landlord by a third party by reason of its ownership of the Leased Land or for any other reason, and which is (i) not caused by negligence of Landlord, and (ii) occasioned wholly or in part by an act or omission of Tenant, or of its employees, contractors, guests, agents, invitees, licensees or assigns.

15. If at any time during the continuance of this Lease the grade of any street or highway near or adjacent to the Leased Land shall be changed pursuant to any order which may be made by the State of New Jersey or by the Board of Public Utility Commissioners or by other lawful authority, Tenant agrees to waive and release any claim or damages whatsoever which it may have by reason of any and all injury or damage caused by or resulting from said change of grade.

16. If the building and/or facilities located on the Leased Land are partially damaged by fire, explosion, flood, earthquake, riot, civil commotion, storm or other casualty, Tenant will repair such damage at its costs and expense and restore the Leased Land to its former condition as expeditiously and promptly as possible. Plans and specifications for such repairs will be submitted by Tenant to Landlord for approval prior to the work being done and Landlord shall not unreasonably withhold or delay such approval. If the Leased Land is damaged by fire, explosion, flood, earthquake, riot, civil commotion, storm or other casualty to an extent which substantially destroys the building and facilities and requires their reconstruction to permit their use as herein provided, Tenant within thirty (30) days after the occurrence of any such event will advise Landlord in writing of its election to reconstruct the building and facilities or to vacate the Leased Land. If

Tenant elects to vacate, it will remove from the Leased Land all of its property and restore the Leased Land to the condition existing prior to Tenant's construction described in Paragraph 2 hereof, except for the removal of piling, within a reasonable period after giving such notice. If Tenant elects to reconstruct the building and facilities, it will perform such work as expeditiously and promptly as possible.

17. Upon the expiration or other termination of this Lease for any reason Tenant shall vacate or surrender to Landlord free and clear of all encumbrances of liens the building and facilities (exclusive of equipment and machinery) located on the Leased Land except that Tenant will remove Tenant's equipment, machinery, personal property and tools. Tenant shall execute such instruments or writings as may be deemed necessary to properly effect the surrender of said building and facilities and their transfer to Landlord; and such building and facilities will be surrendered in good order or condition, reasonable wear and tear excepted. Upon such surrender, said building and facilities shall, without cost or charge to Landlord, become the property of Landlord, free of all liens and claims of Tenant and others.

18. In the event that Landlord elects to sell the Leased Land, Landlord shall give Tenant written notice of such intent, and if Tenant wishes to purchase the Leased Land, it shall so notify Landlord in writing within thirty (30) days after receipt of such notice, and the parties shall negotiate in good faith an acceptable purchase price and payment terms.

In the event that Landlord and Tenant do not execute a suitable agreement setting forth the conditions of sale, including price, within sixty (60) days after Landlord's notice of intent to Tenant, then Tenant's purchase rights hereunder shall automatically expire.

19. Not less than thirty (30) days prior to the expiration of the term hereof, Tenant may notify Landlord that it wishes to continue to lease the Leased Land or to purchase the Leased Land. Thereupon the parties shall negotiate in good faith such continued lease or purchase upon mutually acceptable terms. If, after good faith negotiations, the parties are unable to agree upon mutually acceptable terms for such lease or purchase prior to the expiration of the term hereof, the parties shall have no further obligations hereunder.

20. Tenant shall not, without the prior written consent of Landlord,

(a) assign or transfer, by operation of law or otherwise, this Lease or any interest therein,

(b) underlet the Leased Land or any part thereof,

(c) mortgage or encumber the same, or

(d) permit the same to be occupied by anyone other than Tenant or Tenant's officers or employees.

21. Landlord covenants that if Tenant shall duly keep and perform all the conditions hereof, Tenant shall peaceably and quietly have, hold and enjoy the Leased Land for the term hereof.

22. If there be a default in any of the covenants herein contained, upon twenty (20) days' prior written notice to Tenant specifying the nature of such default (during which period Tenant shall have the right to cure such default) Landlord shall have the right to re-enter the Leased Land and to have, repossess and enjoy same, provided that Tenant has not duly cured said default during such notice period.

23. It is expressly understood and agreed that in case the Leased Land shall be abandoned, or if default continues in the payment of the rent or any part thereof as herein specified after fifteen (15) days' written notice from Landlord, or if, without the consent of Landlord, Tenant shall sell, assign, or mortgage this Lease or any part

thereof, or underlet the Leased Land or any part thereof, or if default continues in the performance of any of the covenants and agreements in this Lease contained on the part of the Tenant to be kept and performed after twenty (20) days' prior written notice from Landlord, Landlord may, if Landlord so elects, at any time thereafter terminate this Lease and the term thereof, upon giving to Tenant five (5) days' notice in writing of Landlord's intention so to do, and upon the giving of such notice, this Lease and the term thereof shall terminate, expire and come to an end on the date fixed in such notice as if said date were the date originally fixed in this Lease for the termination or expiration thereof.

24. In the event the Leased Land or any part thereof be condemned for public use, then in that event, upon the taking of the same for such public use, this Lease, at the option of the Tenant, shall become null and void, and the term shall cease and come to an end upon the date when the same shall be taken and the rent shall be apportioned as of said date. No part of any award, however, shall belong to the Tenant, except that amount which is granted for building and facilities constructed by Tenant.

25. This Lease is, and shall be, subject and subordinate in all respects to all mortgages and liens of any kind which may now or hereafter affect the Leased land or the real property of which the Leased Land forms a part, and to

all renewals, modifications, consolidations, replacements and extensions thereof; provided, however, that Landlord shall obtain agreement from any such mortgage or lienor that for so long as Tenant is not in default hereunder, (i) Tenant shall peaceably and quietly have, hold and enjoy the Leased Land for the term hereof, and (ii) any such mortgagee or lienor shall have no right, lien, encumbrance or security interest in any machinery or equipment (including fixtures) which is attached or made a part of the Leased Land or any buildings or improvements constructed thereon by Tenant. Tenant shall, in confirmation thereof, execute promptly any certificate or certificates Landlord may reasonably request in that connection.

26. Landlord shall have no obligation hereunder to supply, or pay for, any heat, fuel, electricity or water, or any equipment, therefor or any Sewage, or other waste disposal pipes or equipment, or any other utility or service of any kind.

27. The covenants and agreements herein contained are binding on the parties hereto and upon their respective successors and permitted assigns.

28. Words used in the singular shall include words in the plural where the text of this instrument so requires.

IN WITNESS WHEREOF, the parties have executed this Lease by their duly authorized officers and caused their corporate seals to be hereto affixed, the day and year first above written.

Attach.

LCP CHEMICALS & PLASTICS, INC.

By:

Pete D. Moore

Director
Title: Transportation & Distribution

UNION CARBIDE CORPORATON

By:

William J. Kogler WSJ
CFR
JGL

Title: Director of Marketing

5th Street

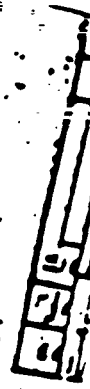


EXHIBIT A



Union Carbide Corporation
Linde Division
308 Harper Drive, Caller Service 13
Moorestown, New Jersey 08057
Telephone (609) 778-6200

RECEIVED

JAN -8 1988

UNION CARBIDE CORP.
SOMERSET REGION OFFICE
SOMERSET, N.J.

RECEIVED

JAN 8 1988
January 7, 1988

N.A. DiFRANCO

Ms. Leah Webb
IT Corporation
165 Fieldcrest Avenue
Edison, NJ 08818

Dear Ms. Webb:

Attached are the results of soil sampling from the UCC Linden plant and a sample location plot which you requested. Please feel free to call if you require additional information or have any questions.

Very truly yours,

S. W. Hickes

cc: D. E. Renner
A. A. Galvan
N. A. DiFranco

ACS-
FILE
LINDEN

GARDEN STATE LABORATORIES, INC.

Bacteriological and Chemical Testing

399 Stuyvesant Avenue

Irvington, N.J. 07111



MATHEW KLEIN, M.S., Director

Telephone
201-373-8007

UNION CARBIDE CORP.
FOOT OF SOUTH WOOD AVENUE
LINDEN, NJ 07036

SAMPLE SUBMITTED: FRI. JANUARY 25, 1985

COMPOSITE SOIL SAMPLE OF
#1 BLACK OUTSIDE REAR DOOR BY 1 & 2
COMPRESSOR #2 WHITE JUST PAST CONCRETE
PAD, #3 GREEN NEAR FAR END OF PAD AND
#4 YELLOW CLOSE END OF PAD NEAR FENCE

RESULTS ARE IN MG/L.

E.P. TOXICITY

ARSENIC	0.003
BARIUM	<1.0
CADMIUM	<0.01
CHROMIUM	0.02
MERCURY	0.0050
SELENIUM	<0.001
SILVER	<0.02

Tom:

This is the Soil test from Linden

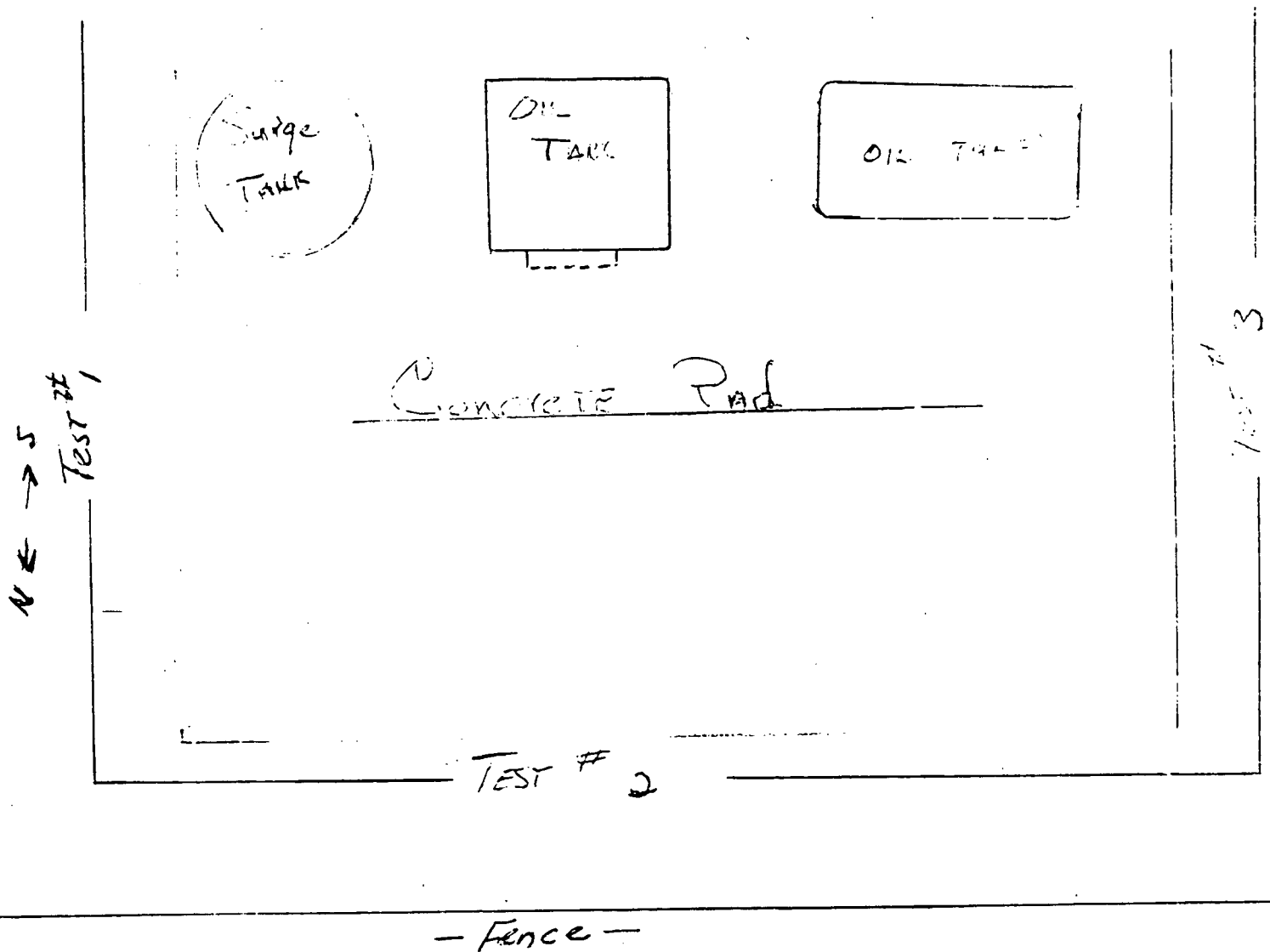
Y BASHIR

THE LIABILITY OF GARDEN STATE LABORATORIES, INC. FOR SERVICES RENDERED SHALL IN NO EVENT EXCEED THE AMOUNT OF THE INVOICE.

Certified by U.S. Public Health Service, N.J. Dept. of Health and N.J.D.E.P. - Lab #07044

E. ←

→ E



SKETCH OF PAD AND SPOTS WHERE SOIL SAMPLES WERE
TAKEN AND TESTED FOR MERCURY AT THE LINDEN H2 PLANT.

Y. Bashir
Y. BASHIR

SAMPLING DATE APRIL 16, 1992									
SAMPLE POINT	AREA 4				AREA 6				FIELD BLANK
SAMPLE DEPTH	PE-1	PE-2	PE-3	PE-4	PE-5	PE-6	PE-7	PE-8	
	4.0-4.5'	4.0-4.5'	4.0-4.5'	4.0-4.5'	4.0-4.5'	4.0-4.5'	4.0-4.5'	4.0-4.5'	
PARAMETERS METALS (ppm)									
Antimony	180	150	180	130	110	80	170	NO	NO
Arsenic	620	830	1,800	600	67	720	1,200	NO	NO
Beryllium	6.6	10	7.5	6.6	30	2.2	3	NO	NO
Cadmium	15	10	19	7	62	3.5	5.5	NO	NO
Chromium	280	320	280	180	210	90	48	NO	NO
Copper	13,000	18,000	18,000	7,200	9,300	3,000	62,800	NO	NO
Lead	18,000	23,000	18,000	11,000	13,000	3,300	84,200	NO	NO
Mercury	0.11	0.16	1.3	NO	0.81	0.34	0.41	NO	NO
Nickel	1,200	1,800	1,300	780	970	230	300	NO	NO
Selenium	3.4	12	7.9	11	11	8.3	6.1	NO	NO
Silver	18	21	18	11	13	3.9	4.1	NO	NO
Thallium	NO	NO	NO	NO	NO	NO	NO	NO	NO
Zinc	78,000	100,000	NO	NO	57,000	4,000	13,000	NO	NO

SAMPLING DATE JUNE 3 & 4, 1991											
SAMPLE POINT	A-2	A-3	A-3	A-4	A-4	A-5	A-5	A-6	A-6	FIELD BLANK	FIELD BLANK
SAMPLE DEPTH	4.0-4.5'	1.0-1.5'	4.0-4.5'	1.0-1.5'	4.0-4.5'	1.0-1.5'	4.0-4.5'	1.0-1.5'	4.0-4.5'		
PARAMETERS METALS (ppm)											
Antimony	76	39	120	46	140	21	76	120	47	NO	NO
Arsenic	570	200	630	320	820	89	400	390	270	NO	NO
Beryllium	5.7	25	3.8	17	4.2	51	3.4	15	17	NO	NO
Cadmium	0.82	2.7	NO	NO	NO	NO	3.4	NO	NO	NO	NO
Chromium	180	150	830	160	79	180	66	NO	NO	NO	NO
Copper	7,900	8,800	4,100	10,000	6,700	12,000	2,900	5,900	93	NO	NO
Lead	11,000	11,000	5,800	12,000	5,300	14,000	4,000	7,100	7,600	NO	NO
Mercury	1.5	1.5	0.97	1.4	1.1	70	4.000	7.100	1.500	NO	NO
Nickel	680	860	370	830	340	1,200	10	0.82	0.61-1.1	NO	NO
Selenium	4.5	3.9	4.3	4.1	4.5	3.8	240	560	600	NO	NO
Silver	6.6	8.4	NO	9.2	1.2	8.7	NO	3.9	6.1	NO	NO
Thallium	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Zinc	57,000	91,000	28,000	57,000	28,000	150,000	20,000	61,000	61,000	NO	NO

SAMPLING DATE JUNE 3 & 4, 1991											
SAMPLE POINT	G-1A	G-3	G-2A	G-1A	K-1	K-2	K-3	K-4	K-5	K-6	FIELD BLANK
SAMPLE DEPTH	1.0-1.5'	1.0-1.5'	1.0-1.5'	1.0-1.5'	3.5-4.0'	3.5-4.0'	3.5-4.0'	3.5-4.0'	3.5-4.0'	3.5-4.0'	
PARAMETERS METALS (ppm)											
Antimony	6.4	NO	NO	NO	150	2.5	2.5	NO	NO	NO	NO
Arsenic	44	1.3	2.4	2.6	600	3	7	NO	NO	NO	NO
Beryllium	4.1	NO	1.1	1.5	5.6	1	1	NO	NO	NO	NO
Cadmium	NO	NO	NO	NO	NO	NO	0.82	NO	NO	NO	NO
Chromium	56	4.3	2.7	28	170	41	20	1.2	0.83	2.3	NO
Copper	1100	9.4	13	21	7800	38	7	NO	NO	NO	NO
Lead	1300	5.4	14	12	13,000	26	8.4	43	18	27	NO
Mercury	26	0.18	NO	NO	0.22	0.25	12	80	72	25	NO
Nickel	140	NO	33	41	620	56	31	0.31	0.12	15	NO
Selenium	0.77	NO	NO	NO	4.6	NO	NO	34	28	38	NO
Silver	NO	NO	NO	NO	1.4	NO	NO	NO	0.95	NO	NO
Thallium	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Zinc	12,000	36	110	240	34,000	840	200	160	72	93	NO
BASE/NEUTRAL ORGANICS (ppm)											
Bis(2-Ethylhexyl)Phthalate	NO	NO	1	NO	NA	NA	NA	NA	NA	NA	NO
Fluorene	NO	5.6	NO	NO	NA	NA	NA	NA	NA	NA	NO
Nitrobenzene	NO	7.7	NO	NO	NA	NA	NA	NA	NA	NA	NO
Phenanthrene	NO	11	NO	NO	NA	NA	NA	NA	NA	NA	NO
TOTAL PRIORITY POLLUTANT BASE/NEUTRALS (ppm)	NO	24.1	1	NO	NA	NA	NA	NA	NA	NA	NA

SAMPLING DATE APRIL 16, 1992							
SAMPLE POINT	T-1	T-2	T-3	T-4	T-5	T-6	FIELD BLANK
SAMPLE DEPTH	0-1'	0-1'	0-1'	0-1'	0-1'	0-1'	
PARAMETERS POLYCHLORINATED							
ENDRYNALS (ppm)	NO	NO	NO	NO	NO	NO	NO
AROCHELOP 1016	NO	NO	NO	NO	NO	NO	NO
AROCHELOP 1221	NO	NO	NO	NO	NO	NO	NO
AROCHELOP 1232	NO	NO	NO	NO	NO	NO	NO
AROCHELOP 1244	NO	NO	NO	NO	NO	NO	NO
AROCHELOP 1255	NO	NO	NO	NO	NO	NO	NO
AROCHELOP 1266	NO	NO	NO	NO	NO	NO	NO
TOTAL PCNs (ppm)	1.9	NO	0.70	NO	0.15	0.11	NO

		SAMPLING DATE JUNE 12, 1990																	
SAMPLE POINT		1-1	1-2	1-3	1-4	1-5	1-6	1-7	1-8	1-9	1-10	1-11	1-12	1-13	1-14	1-15	1-16	1-17	1-18
SAMPLE DEPTH		1-1	1-2	1-3	1-4	1-5	1-6	1-7	1-8	1-9	1-10	1-11	1-12	1-13	1-14	1-15	1-16	1-17	1-18
METALS (ppm)		1-1	1-2	1-3	1-4	1-5	1-6	1-7	1-8	1-9	1-10	1-11	1-12	1-13	1-14	1-15	1-16	1-17	1-18
Antimony	31	62	130	22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	85	130	300	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	40	15	14	17	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	18	15	18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	83	83	83	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	11,000	700	1,800	1,200	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	11,000	1,700	1,200	7,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	0.10-0.15	2.3	0.40	1.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	10,000	700	1,200	140	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	1.8	2.1	1.3	3.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	5.7	4.1	3.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	1,000	12,000	50,000	30,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRIORITY POLLUTANT BASE/NEUTRAL ORGANICS (ppm)	NA	0.007	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL PETROLEUM HYDROCARBONS (ppm)	70	82	300	120	630	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA


1 ND signifies not analyzed
2 NA signifies not detected

SAMPLING DATE AUGUST 7, 1991			
SAMPLE POINT		F-1A	F-2A
SAMPLE DEPTH		3.5-4.0'	3.5-4.0'
METALS (ppm)			
Antimony		100	210
Arsenic		270	390
Beryllium		42	67
Cadmium		ND	74
Chromium		120	3,900-7,400
Copper		11,000	4,900-8,700
Lead		12,000	300-430
Nickel		870	4.8
Selenium		4.3	2.8
Silver		ND	28,000-48,000
Thallium		100,000	NA
Zinc		ND	NA
TOTAL PETROLEUM HYDROCARBONS (ppm)		ND	NA

SAMPLING DATE APRIL 17, 1992		AREA D/C					AREA C-3		FIELD BLANK
SAMPLE POINT		PE-1	PE-2	PE-3	PE-1	PE-1	PE-3	PE-4	
SAMPLE DEPTH		2.5-3.0'	2.5-3.0'	2.5-3.0'	1.5-2.0'	1.5'	1.5-2.0'	1.5-2.0'	
PRIORITY POLLUTANT METALS (ppm)									
Antimony	270	18	81	NA	N	NA	NA	NA	140
Arsenic	110	13	73	NA	N	NA	NA	NA	ND
Beryllium	14	ND	1.1	NA	N	NA	NA	NA	ND
Cadmium	11	ND	0.85	NA	N	NA	NA	NA	ND
Chromium	11	ND	18	NA	N	NA	NA	NA	ND
Copper	1,100	380	680	NA	N	NA	NA	NA	ND
Lead	1,300	120	540	NA	N	NA	NA	NA	44
Mercury	1.7	0.41	1.1	NA	N	NA	NA	NA	ND
Nickel	110	25	80	NA	N	NA	NA	NA	ND
Selenium	ND	ND	1.3	NA	N	NA	NA	NA	ND
Silver	ND	ND	ND	NA	N	NA	NA	NA	ND
Thallium	8,700	1,500	4,400	NA	N	NA	NA	NA	ND
Zinc									58
BASE/NEUTRAL ORGANICS (ppm)									
Di(2-Ethylhexyl)phthalate	NA	NA	NA	1.2	N	2.6	ND	ND	ND
Naphthalene	NA	NA	NA	ND	N	0.89	1.8	ND	ND
Phenanthrene	NA	NA	NA	ND	N	0.89	1.8	ND	ND
TOTAL PRIORITY POLLUTANT BASE/NEUTRAL ORGANICS (ppm)		NA	NA	NA	1.2	N	3.5	1.8	ND
							34.8	60.9	0.33

SAMPLING DATE JUNE 4, 1991									
SAMPLE POINT		B-3	B-4	B-5	B-5	B-6	B-6	B-7	B-7
SAMPLE DEPTH		10-1.5'	10-1.5'	10-1.5'	40-4.5'	10-1.5'	40-4.5'	10-1.5'	40-4.5'
PARAMETERS METALS (ppm)									
Antimony	29	36	51	15	50	48	17	74	170
Arsenic	98	160	170	340	44	530	180	4.8	170
Beryllium	39	18	87	5.2	5.9	4.9	20	4.8	170
Cadmium	13	14	16	31	5.4	36	14	ND	ND
Chromium	75	68	78	82	55	170	87	ND	ND
Copper	8,900	5,600	3,700	4,100	1,900	4,700	5,100	ND	ND
Lead	10,000	7,300	4,900	3,700	2,500	6,700	7,200	ND	ND
Mercury	1.8	2.1	1.5	0.72	0.81	0.45	22	ND	ND
Nickel	1,000	670	400	620	260	350	550	5.1	5.1
Selenium	8.1	3.8	2.2	2.8	1.2	7.0	5.8	4.2	4.2
Silver	4.1	3.4	2.1	3.0	1.3	5.8	2.3	ND	ND
Thallium	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	95,000	57,000	31,000	25,000	27,000	28,000	53,000	29,000	29,000

0 20 40 60
SCALE OF FEET

0	6/21/94	DEVELOPED DRAWING	E.P.W.	PD	P.D.
REV. #	DATE	DESCRIPTION OF REVISION	REV. BY	ENG	CHKD BY APPVD BY
PROJECT MANAGER:		P. DINAKOS		DRAWN BY: M.S. MAIBACH, SR.	
					
<p>FIGURE 2</p> <p>FACILITY LAYOUT WITH AREAS OF CONCERN, SOIL SAMPLING LOCATIONS AND ANALYTICAL RESULTS</p> <p>Prepared For:</p> <p>PRAXAIR, INC.</p> <p>TONAWANDA, NEW YORK</p> <p>PROJECT No. 529326</p> <p>JUNE 1994</p>					
LAYER(S)		DATE INITIATED		DRAWING NUMBER	
0		9/8/90		529326-E1	

0	6/21/94	DEVELOPED DRAWING	E.K.W.	P.D.	P.D.
REV. #	DATE	DESCRIPTION OF REVISION	REV. BY	ENG	CHKD BY APPVD BY
PROJECT MANAGER: P. DIMAKOS			DRAWN BY: M.S. MAIBACH, SR.		



INTERNATIONAL
TECHNOLOGY
CORPORATION

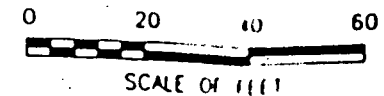
FIGURE 2

FACILITY LAYOUT WITH AREAS OF
CONCERN, SOIL SAMPLING LOCATIONS
AND ANALYTICAL RESULTS

Prepared For:

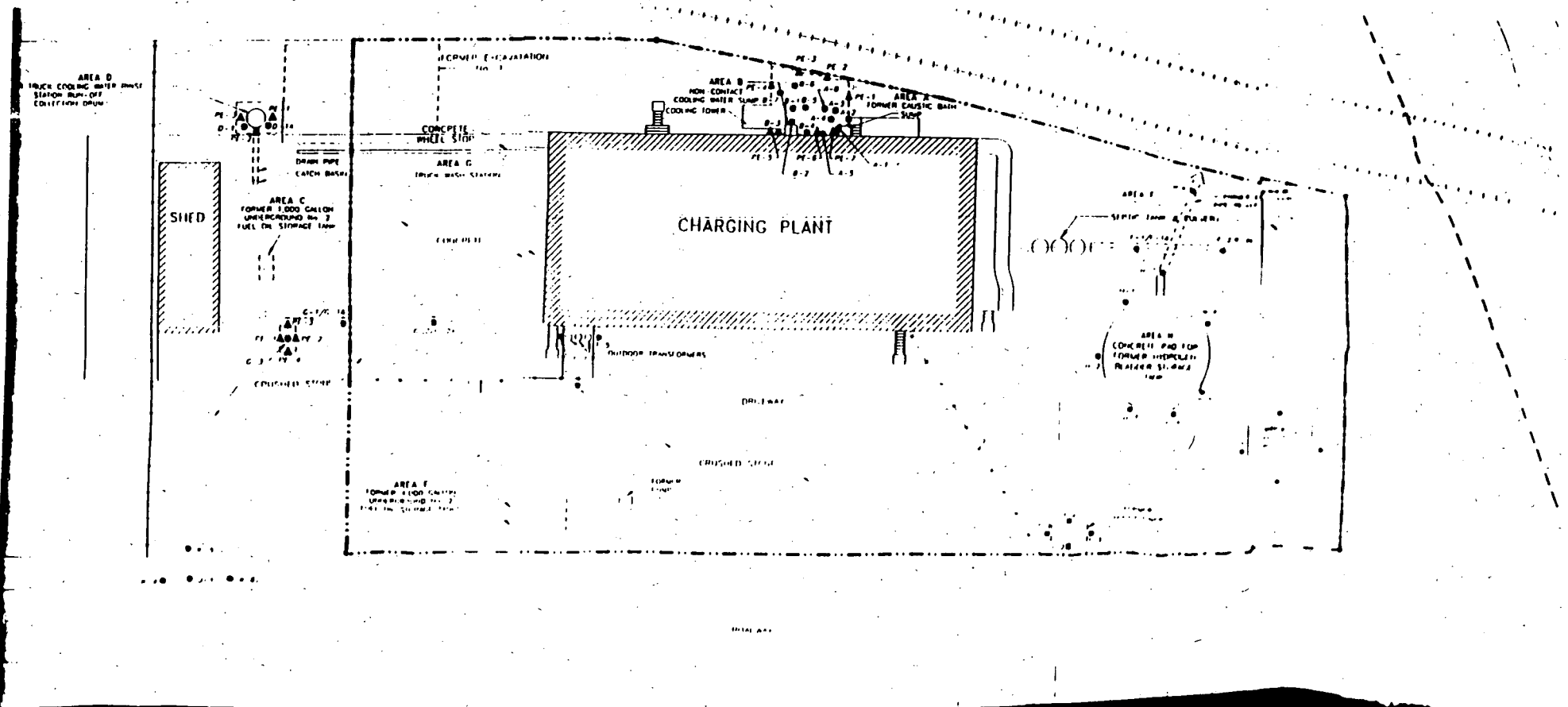
PRAXAIR, INC.
TONAWANDA, NEW YORK
PROJECT No. 529326
JUNE 1994

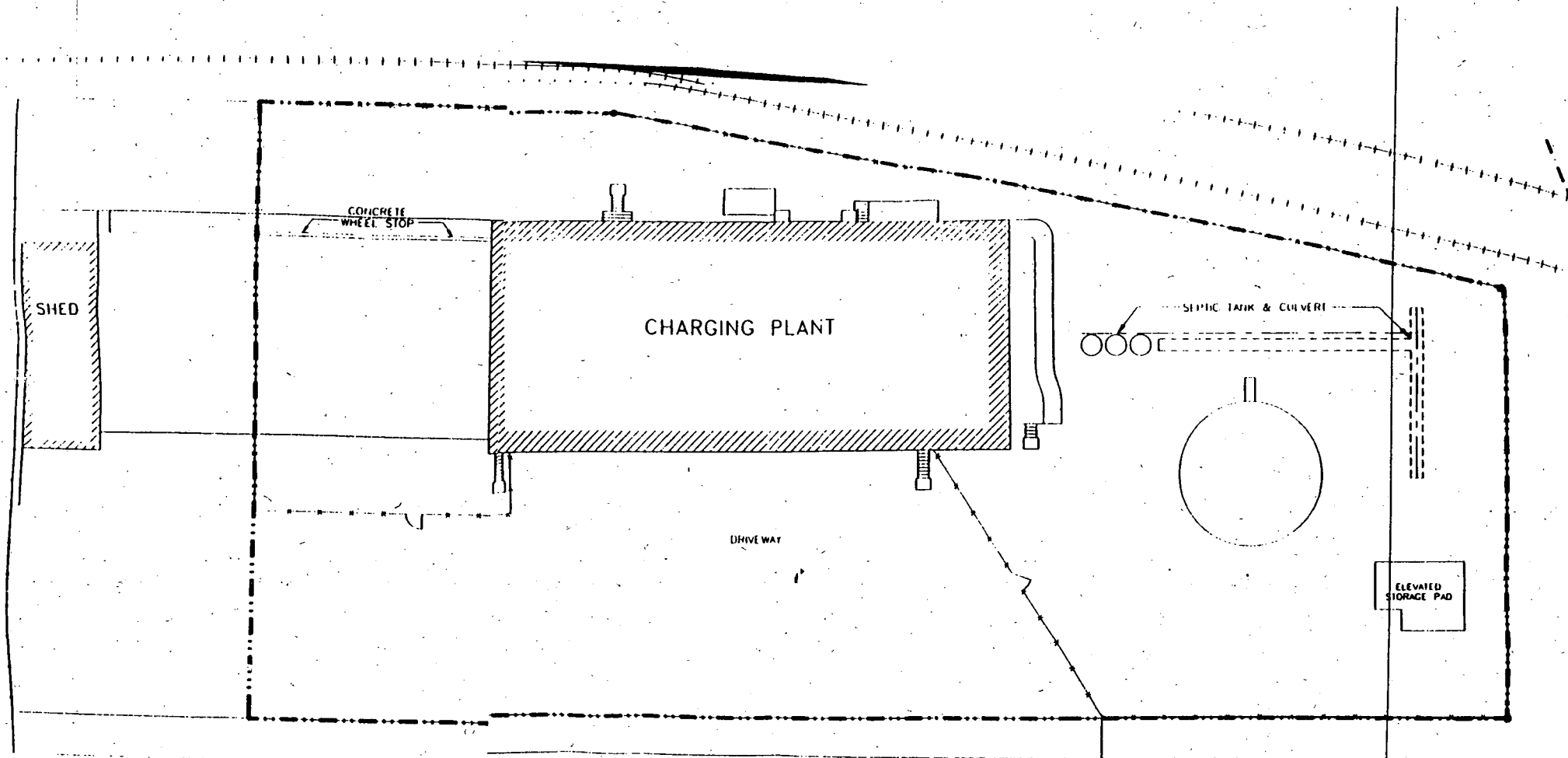
LAYER(S)	DATE INITIATED	DRAWING NUMBER
0	9/8/90	529326-E1



LEGEND

---	LOT LINE
- - - - -	FENCE LINE
---	BLOCK LINE
	RAILROAD
▲	POST-EXCAVATION SOIL SAMPLE LOCATION
●	SOIL SAMPLE LOCATION
- - - - -	PERIMETER EXCAVATION






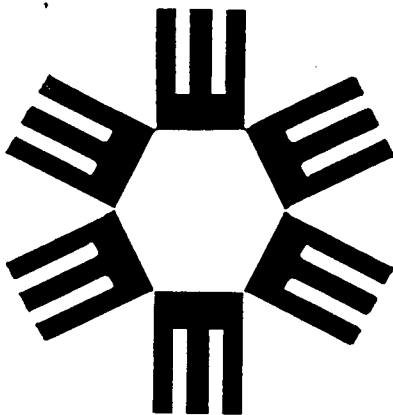
0 20 40 60
SCALE OF FEET

LEGEND

- CURRENT LOT LINE
- x-x-x- FENCE LINE
- . - BLOCK LINE
- + + + + + RAILROAD

NEW ASPHALT

0	6/21/94	DEVELOPED DRAWING	EKW/DWB	P.D		
REV. #	DATE	DESCRIPTION OF REVISION	REV. BY	ENG	CHKD BY	APPVD BY
PROJECT MANAGER:		P. DIMAKOS		DRAWN BY:		M.S. MAIBACH, SR.
 INTERNATIONAL TECHNOLOGY CORPORATION						
<p>FIGURE 3 AS BUILT OF FACILITY LAYOUT LINDE FACILITY LINDEN, NEW JERSEY Prepared For: PRAXAIR, INC. TONAWANDA, NEW YORK PROJECT No. 529326 JUNE 1994</p>						
LAYER(S)		DATE INITIATED		DRAWING NUMBER		
FIGURE 1		9/8/90		529326-D1		



M. DiGiuseppe
ENVIROSAFE SERVICES OF OHIO, INC.
876 OTTER CREEK RD. P.O. BOX 167571
OREGON, OHIO 43616-7571

Application for Acceptance of Waste Product

TELEPHONE (24 HOURS) 419-726-1521

TOLL FREE (INSIDE OHIO) 800-472-0414

TOLL FREE (OUTSIDE OHIO) 800-537-0426

U.S. EPA I.D. Number OHD045243706

JAN 20 1990

UNION CARBIDE CORP.
CORP. REGION OFFICE
COMERSET NJ

SECTION A - GENERATOR DATA

1. Generator UNION CARBIDE CORP - LINDE DIV.

Address SOUTH WOOD AVENUE

City/State LINDEN, NJ

ZIP 07036

Tech. Contact JOHN CRANE

TEL (201) 589-7435

2. County

UNION

3. U.S. EPA IDENTIFICATION NUMBER

N J D 0 1 1 3 9 2 7 3 5

4. Billing/Broker IT CORP.

Address 165 FIELDCREST AVE.

City/State EDISON, NJ

ZIP 08818

Billing Contact LEAH WEBB

TEL (201) 225-2000

Envirosafe Services Only

Application #

PCN

CUST# 0

☐ DIRECT
☐ BILLING
BROKER

☐ ACES
☐ ESPI

Sales Zone Code

TAX ☐ YES ☐ NO

Acceptance Code

Laboratory Test Code

Update Analysis Code

SECTION B - WASTE CHARACTERIZATION

Form 87-1

1. Common Name for This Waste: SOIL CONTAMINATED W/ OIL + MERCURY

2. Process Generating This Waste: OIL LEAKED ONTO SOIL OVER A PERIOD OF YEARS. MERCURY RESULTED FROM H₂ GAS FILLING.

3. Annual Quantity: 40 1 ☒ Tons 2 ☐ Yards 3.1 3 ☐ Drums

4. Shipment Duration: 5. Shipment Mode:

1 ☐ Permanent (1 Year or Longer)

1 ☒ Bulk

2 ☐ Palletized
Boxes

3 ☐ Woven
Cloth Bags

4 ☐ Metal
Drums

2 ☒ Temporary (Less Than 1 Year) 5 ☐ Other:

SECTION C - PHYSICAL PROPERTIES

1. Describe Physical State at 70° F:

1 ☒ Dry Solid

2 ☐ Damp Solid

3 ☐ Semi-Solid / Gel

4 ☐ Flowable Liquid

6 ☐ Labpack

2. Describe Load Bearing Strength at 70° F: 2.1 Penetrometer PSI: 2.2 % Solids @105°C:

1 ☒ Solid / Rigid

2 ☐ Sludge

3 ☐ Weak / None

90

3. Describe Physical Appearance of Waste (Include Color):

BROWN SOIL

4. Apparent Density of Waste:

2200 Lb./ Cu. Yard

5. Flash Point (TAG or Setaflash Closed Cup):

5.1 Actual Flash Pt: 5.2 Combustible:

1 ☐ 25-70° F 2 ☐ 70-100° F 3 ☐ 100-140° F 4 ☒ >140° F

 °F 1 ☐ Yes 2 ☒ No

6. pH (10 % Slurry in Distilled Water for Solids):

6.1 Actual pH (S.U.):

1 ☐ < 2.0

2 ☐ 2.0-5.0

3 ☒ 5.0-10.0

4 ☐ 10.0-12.5

5 ☐ > 12.5

7. Describe Odor of Waste:

8. Describe Temperature of Waste at Time of Disposal:

1 ☒ None

2 ☐ Slight

3 ☐ Strong

1 ☒ Ambient -100° F

2 ☐ 100-140° F

3 ☐ >140° F

SECTION D - WASTE COMPOSITION

1. List all components within the waste stream by percentage.
Account for 100 percent of waste in the TYPICAL % column.

Application #
PCN

	TYPICAL %	RANGE %
SOIL	99	-
PETROLEUM HYDROCARBONS	1	-
MERCURY	12 mg/kg	-
		-
		-
		-
		-
		-
		-
		-

SECTION E - ANALYTICAL REPORT

PARAMETER	mg/Kg (Total)	mg/L (Extract)	PARAMETER	mg/Kg (Total)	mg/L (Extract)	PARAMETER	mg/Kg (Total)	mg/L (Extract)
Aluminum			Total Cyanide	NONE		Acetone	NONE	
Antimony			Free Cyanide			Butanol		
Arsenic		0.003	Total Sulfide			Carbon Disulfide		
Barium		<1.0	Soluble Sulfide			Carbon Tetrachloride		
Beryllium			Phenolics			Chlorobenzene		
Cadmium		<0.01	Chloride			Cresols-Cresylic Acid		
Chromium (hex)			Fluoride			Cyclohexanone		
Chromium (tot)			Phosphate			1,2-Dichlorobenzene		
Cobalt			Sulfate			Ethyl Acetate		
Copper			Nitrate-N			Ethyl Benzene		
Iron			Nitrite-N			Ethyl Ether		
Lead			Ammonia-N			Isobutanol		
Mercury	12	<0.0050	Kjeldahl-N	✓		Methanol		
Nickel			Oil & Grease	10,000		Methylene Chloride		
Selenium		<0.001	TOC (Carbon)	10,000		Methyl Ethyl Ketone		
Silver		<0.02	TOX (Halogen)	-		Methyl Isobutyl Ketone		
Thallium			PCB's	NONE		Nitrobenzene		
Zinc						Pyridine		
						Tetrachloroethylene		
						Toluene		
						1,1,1-Trichloroethane		
Endrin	NONE					Trichlorotrifluoroethane		
Lindane						Trichloroethylene		
Methoxychlor						Trichlorofluoromethane		
Toxaphene						Xylene(s)	✓	
2,4-D								
2,4,5-TP/Silvex	✓							

SECTION F - WASTE CLASSIFICATION

1. RCRA Waste Description from 40 CFR 261: ☒ RCRA NON-HAZARDOUS

Application #

PCN

2. RCRA EPA Waste Code(s) from 40 CFR 261:

3. Does Waste Contain the Following:

EXPLOSIVE	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
SHOCK SENSITIVE	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
PYROPHORIC	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
PATHOGENIC	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
INFECTIOUS	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
RADIOACTIVE	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO

If YES, Explain in Section H

SECTION G - U.S. DOT SHIPPING DESCRIPTION

1. U.S. DOT Proper Shipping Name (PSN):

NON-HAZARDOUS SOIL CONTAMINATED WITH OIL

2. DOT Hazard Class:

N/A

3. Code:

--	--

4. UN/NA Number:

--	--	--	--	--	--

5. Additional DOT Descriptions:

SECTION H - ADDITIONAL COMMENTS

1. Additional Comments, Descriptions, or Waste Stream Information:

VENDORS OF H₂ GAS PRODUCED

PROCESS DIAGRAM OR PHOTOGRAPH

IT ASA BYPRODUCT OF

MANUFACTURING CHLORINE

GAS: HCl ^{RUN THROUGH} MERCURY BATTERY CELLS → Cl₂ ↑ H₂ ↑

→ THE HYDROGEN GAS + MERCURY THROUGH A PIPELINE FROM VENDORS.

THE MERCURY FROM THESE

BATTERY CELLS ATTACHED

TO THE HYDROGEN GAS.

THE MERCURY WAS IN

GASEOUS FORM; HOWEVER,

IN THE QUANTITIES PRESENT

IT EVOLVED INTO VAPOR

THEN LIQUID MERCURY,

UNION CARBIDE RECEIVED

SECTION J - CERTIFICATION

Application #	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
PCN	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

1. GENERATOR CERTIFICATION STATEMENT:

I HEREBY CERTIFY THAT AS AN AUTHORIZED REPRESENTATIVE OF THE GENERATOR NAMED HEREIN, ALL INFORMATION SUBMITTED IN THIS AND ALL ATTACHED DOCUMENTS IS TRUE AND ACCURATE. TO THE BEST OF MY KNOWLEDGE, ALL KNOWN AND SUSPECTED HAZARDOUS COMPONENTS HAVE BEEN INCLUDED IN THE DOCUMENTATION.

[Signature]
SIGNATURE

01/18/88
DATE

OPER. MGR.
TITLE

SECTION K - DISPOSAL SITE USE ONLY

- | | |
|---|--|
| 01. <input checked="" type="checkbox"/> Normal Operating Arrival Hours: Bulk 6:45 AM - 3:30 PM. Drums, Bags, Boxes and Special Handling 7:00 AM - 2:00 PM | |
| 02. <input checked="" type="checkbox"/> Product Code Number Must Appear on Each Manifest or Shipping Paper Required by EPA or DOT | |
| 03. <input type="checkbox"/> Bulk Disposal Charges Will be Billed by the Cubic Yard if Waste Density is Less Than 2000 Pounds per Cubic Yard | |
| 04. <input type="checkbox"/> Acceptance Ends _____; Provide Waste Minimization Data to ESOI for OEPA by _____ To Continue | |
| 05. <input type="checkbox"/> Generator Must Provide Updated Analysis _____, 19____ and Annually Thereafter | |
| 06. <input type="checkbox"/> pH of a 10% Slurry of Waste in Distilled Water Must be at Least _____ but Less Than _____ by ESOI Methods | |
| 07. <input type="checkbox"/> Flash Point of Incoming Material Must be _____ °F or Greater by ESOI Methods | |
| 08. <input type="checkbox"/> Bulk: No Unauthorized Materials or Free Liquids | 22. <input type="checkbox"/> Generator Must Schedule Containers, Obtain Acc. No. |
| 09. <input type="checkbox"/> Bulk Scheduling Requirements | 23. <input type="checkbox"/> PCN Stenciled on Each Drum or Container (Top, Side) |
| 10. <input type="checkbox"/> Bulk PCN's Prohibition on Mix Without Authorization | 24. <input type="checkbox"/> Drums No Free Liquid, Void Space, Metal, < 800 Pounds |
| 11. <input type="checkbox"/> General Bulk Waste Mixing Instructions | 25. <input type="checkbox"/> Containerized Material Must be Solid, Non-flowable |
| 12. <input type="checkbox"/> Bulk Must Contain Sufficient Moisture to Suppress Dust | 26. <input type="checkbox"/> Exemption Requirements for Land Ban Waste |
| 13. <input type="checkbox"/> Woven Cloth Bags; Acceptance Requirements | 27. <input type="checkbox"/> Certify Waste Does Not Contain F001-F005 Solvents |
| 14. <input type="checkbox"/> Palletized Boxes; Acceptance Requirements | 28. <input type="checkbox"/> Participation in Monthly Analytical Survey |
| 15. <input type="checkbox"/> Material Solid, Non-flowable & Penetrometer Standard | 29. <input type="checkbox"/> Heat Generation in Contact With Water Requirements |
| 16. <input type="checkbox"/> Miscellaneous Debris 3 Feet Dimensional Limit | 30. <input type="checkbox"/> Caustic Concentration Limit Requirements |
| 17. <input type="checkbox"/> ESOI has Stds. for Odor, Temperature & Liquid Stability | 31. <input type="checkbox"/> Gas Generation in Contact With Water Requirements |
| 18. <input type="checkbox"/> Odoriferous Waste May Not be Acceptable | 32. <input type="checkbox"/> Standard Conditions for Custom Asbestos |
| 19. <input type="checkbox"/> Cyanide or Sulfide Permit Limit Requirements | 33. <input type="checkbox"/> Standard Conditions for Generic Asbestos |
| 20. <input type="checkbox"/> PCB Concentration Limit Requirements | 34. <input type="checkbox"/> Standard Conditions for Custom Labpacks |
| 21. <input type="checkbox"/> Oxidizer Concentration Limits & Isolation Requirements | 35. <input type="checkbox"/> Standard Conditions for Generic Labpacks |

SIGNATURE

DATE

TITLE

SECTION L - REGULATORY AGENCY USE ONLY

1. ACCEPTANCE STATUS:

1 ☐ ACCEPTED

2 ☐ CONDITIONAL ACCEPTANCE

4 ☐ ACCEPTANCE DENIED

2. CONDITIONS FOR ACCEPTANCE OR REASONS FOR DENIAL:

SIGNATURE

TITLE

DATE

AGENCY

3. ACCEPTANCE AMENDED:

SIGNATURE

TITLE

DATE

AGENCY

PACKAGED & SPECIALTY GASES PRODUCTION TECHNOLOGY

TRIP REPORT

<u>ROUTING</u>	<u>LOCATION VISITED:</u>	Linden, New Jersey	<u>DISTRIBUTION</u>
<u>EM</u>			<u>CENTRAL FILE</u>
	<u>PERSON(S)</u>		
	<u>CONTACTED:</u>	Ya Ya Bashir	L. E. Barron
			J. A. Cheney
			J. R. Crane
	<u>VISIT MADE BY:</u>	N. A. DiFranco	<u>DATE:</u> 8/8/85
	<u>CALLED WITH:</u>	T. C. Ahlers	T. E. Martinez
		T. E. Martinez	J. S. Pirretti
	<u>PURPOSE:</u>	Environmental Decommissioning Review	T. E. DeBriac

DISCUSSION:

Operations at the Linden Hydrogen Plant are expected to cease by the end of 1985. Hydrogen operation will be transferred to Keasbey Specialty Gas. The plant was built in 1957 on property leased by Linden Chlorine Products. Hydrogen was supplied to the plant by LCP through a pipeline and gas holder unit until when LCP ceased producing hydrogen by the Chlor-Alkali cell process. Since that time, hydrogen has been supplied by truck from Ashtabula, Ohio. Because of the source of hydrogen from the mercury cell dissociation of HCL, it is most likely and probable that all process equipment and piping has been contaminated with mercury.

A. Permits:-

1. EPA ID Number NJD011392735 for the occasional disposal of small quantities of hazardous waste.
2. City of Linden Permit 31042 expires 7/1/86 for the storage of flammable and combustible liquids.

TRIP REPORT

Linden, NJ

B. Inventory of Chemicals, Fuels and Wastes:

1. Cylinder paints and thinners typically found in plants.
2. 5 gallon Houghto-Suf oil, 1055.
3. Amoco #260 compressor oil, 2 drums for Norwalk Compressor.
4. Hydrogen Purifier columns, high pressure:
 - a. Hydrocarbon removal - 2 columns
 - b. Oxygen removal - 2 columns
 - c. Moisture removal - 1 column
5. Cooling tower chemicals:
 - a. Caustic #2-L from Garrett-Callahan - 1 drum
 - b. Brocide formula 32 from Garrett-Callahan - 2 drums, 115 pounds ea.
6. Repair area:
 - a. 1 gallon caster oil
 - b. 1 gallon metal cutting fluid
 - c. 1 gallon penetrating fluid
 - d. 1 gallon denatured alcohol
7. Waste oil:
 - a. 17 drums of waste oil contaminated with mercury in overpacked drums.
 - b. Oil collector behind plant - 1/3 full
 - c. 2 oil tanks next to collector - empty
 - d. Approximately 80 empty oil drums behind the plant
 - e. 5 drums next to east fence - partially full
8. Asbestos:
 - a. Steam pipe insulation throughout plant, probably asbestos
 - b. Piping insulation from gas holder is probably asbestos
 - c. Transite board on cooling tower and partition running from the garage along the trailer hook-up stations.

TRIP REPORT

Linde, NJ

9. Two 4,000 gallon underground storage tanks, one almost full of diesel fuel, the other is empty.
10. Miscellaneous paints and oils in shed by the cooling tower.
11. One drum of paint thinner next to the old liquid filling pad, along with two empty drums.
12. Caustic cylinder stripping cabinet behind plant has not been used in ten years. Partially filled drum of caustic inside the cabinet.
13. Two large driers outside the plant on north side.
14. One drum of diesel fuel conditioner next to the garage.
15. Miscellaneous automotive paints inside the garage.
16. Abandoned underground storage tank next to garage filled with sand and dirt, previous contents and volume unknown.
17. Probable mercury contaminated piping and equipment throughout plant, including gas holders.
18. Cooling towers behind plant, one out of service for years, one currently in use.

C. Utilities:

1. Water supplied by City of Linden.
2. Electricity supplied by PSE&G.
3. Sewer - 2 septic systems on property. Both cleaned out last year.

D. PCB's:

1. There are 3 transformers next to the plant, ownership uncertain. PCB content unknown.

E. Regulatory Requirements:

1. New Jersey ECRA Requirements - Discussions with the New Jersey DEP Bureau of Site Evaluation revealed that the ECRA Requirements must be met, either by Linden or Linden Chlorine if Linde decides not to renew the lease. Plainly speaking, the state has the right to review the closing of the plant and can force either party, Linde or LCP, to conduct remedial work on the property to remove environmental liabilities.

TRIP REPORT

Linden, NJ

2. Asbestos Removal - If dismantlement of the plant is required by the lease or is done to salvage equipment, the removal and disposal of the asbestos insulation will be governed by the EPA Air Pollution Regulations.

F. Miscellaneous:

1. There are no miscellaneous items.

G. Action Steps and Summary:

The decommissioning of the Linden plant presents a situation not commonly encountered. Four major issues are intermingled, each one having an impact on the other:

1. The probable contamination of plant equipment and piping with mercury, and whether the equipment will and can be reused.
2. The disposition of the lease agreement with Linden Chlorine as to whether the buildings can be left intact or must be rayed.
3. The health effects of workers being exposed to mercury vapor while dismantling plant equipment.
4. The impact of the New Jersey ECRA Regulations as it relates to the plant closing and termination of the lease.

Because of the complexity of this situation, a suitable action plan for environmental decommissioning cannot be established at this time. It is recommended instead that a meeting be held at Somerset with Eastern Region Production, Packaged Gas Technology and Specialty Gas to sort out all details of the plant closure and to prepare an appropriate action plan for environmental decommissioning.


N. A. DiFranco

NAD:ld
11/7/85

PRAXAIR

DRY ICE PLANT - P.O. BOX 130 - BURLINGTON, NJ
609/387-0770 - FAX 609/387-8135

FAX FOR: NICK DIFRANCO

DATE: 8-19-96

LOCATION: _____

FROM: Bob Brown

LOCATION: BURLINGTON, NJ

TOTAL PAGES (INCLUDING COVER) 2

MESSAGE: THE LINDEN FACILITY CEASED
OPERATION IN OCTOBER 1994. WE
RENTED THE OFFICE/LOT FROM LCP CHEMICAL.

PLEASE ADVISE ON HANDLING
ATTACHED VIOLATION.

- Bob to send 1994 or 1995 RTK form. to MGR.
- No product or sale in 1995



State of New Jersey

Christine Todd Whitman
Governor

Department of Environmental Protection

Robert C. Shinn, Jr.
Commissioner

6 8 1 0 8 7 0 0 0 0 2 5 1 6 9

6 8 1 0 8 7 0 0 0 0 2 2 0 0 9

ATTN: ROBERT BROWN
LIQUID CARBONIC INDUSTRIES CORP
(LINDEN/WARD AVE S)
P O BOX 130
BURLINGTON, NJ 08016LIQUID CARBONIC INDUSTRIES CORP
FOOT OF WARD AVE S

NOTICE OF VIOLATION

You are hereby NOTIFIED that as the result of an investigation on August 12, 1996, the following violation(s) of the New Jersey Worker and Community Right to Know Act (N.J.S.A. 34:5A-1 et seq.) or the New Jersey Administrative Code(s) (N.J.A.C. 7:1G-1 et seq.) was determined. This violation(s) has been recorded as part of the enforcement history of the above facility.

CODE REFERENCE: N.J.A.C. 7:1G-3.1(a) and 5.1(a)

DESCRIPTION OF VIOLATION: You failed to complete and return to the Department by March 1, 1996, the 1995 Community Right to Know Survey for the above facility.

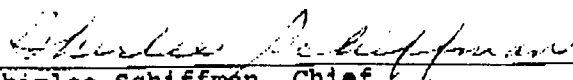
Compliance with the above Code must be achieved by September 14, 1996.

Complete and return the 1995 Community Right to Know Survey to:
New Jersey Department of Environmental Protection
Bureau of Chemical Release Information and Prevention
1995 Community Right to Know Survey
CN-405
Trenton, New Jersey 08625-0405

Receipt of this NOTICE OF VIOLATION shall serve as notice to you that the Department has determined that a violation(s) has occurred and you may be subject to administrative or judicial enforcement action, and/or penalty assessment, with respect to this or other violations. You may be able to limit or reduce your liability for this violation if corrected by the date above.

If there are any questions concerning this Notice, you may call (609) 292-6714 or (609) 984-3219.

Dated: August 14, 1996


Shirlee Schiffman, Chief
Bureau of Chemical Release
Information and Prevention

NOTE: If you already mailed your 1995 survey, please forward a copy marked "May Be Duplicate" to the address above.

UNION CARBIDE INDUSTRIAL GASES INC.
39 Old Ridgebury Road
Law Department

Danbury, CT 06817-0001

September 15, 1989

Messrs. J. G. Lee
V. A. Smith
R. G. Tisch

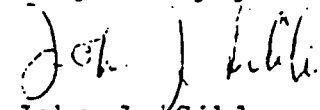
Re: Lease Agreement - LCP Chemicals &
Plastics, Inc. - Premises:
Linden, New Jersey

Gentlemen:

Attached hereto is a notice of Hanlin Group, Inc. was received at Carl Koch's office in Moorestown.

Depending upon how the business is divided, the Linden property may have a new owner with a reduced asset base.

Very truly yours,


John J. Sibley

JJS/pt
Attachment
0950c

cc: M. W. Carlo

RRR - use as model 5
Copy

HANLIN GROUP, INC.
RARITAN PLAZA II
CN #3106
EDISON, NEW JERSEY 08818
(201) 225-4840
FAX: (201) 225-6508

Dear Director of Marketing:

I want to personally inform you of important changes taking place at Hanlin, changes that are very much to the benefit of Hanlin and its suppliers.

Please read the attached letter written by Mr. C. A. Hansen, Hanlin's Chairman, and Mr. R. W. Hansen, Hanlin's C.F.O.

As you can see, very shortly we will complete a restructuring of Hanlin. This restructuring will transform Hanlin into two separate companies. Linchem, Inc. will be a distinct legal and operating entity separate from Hanlin made up of Hanlin's current potassium products business which includes the Ashtabula, Ohio plant, a producer of chlorine and chloropicrin, as well as potassium products.

Please note that the rest of Hanlin remains unchanged.

All purchases relevant to the Ashtabula plant and the potassium products business (i.e. Linchem) up to the time of closing will remain with Hanlin and will be paid by Hanlin. Thereafter, Linchem will be responsible for all new commitments. The invoice address for Linchem will be: Linchem, Inc., 3509 Middle Road, Ashtabula, Ohio 44004.

All purchasing activity other than that affecting Linchem will remain with Hanlin as they have in the past, unchanged.

We would appreciate your acknowledgement and agreement to these changes and new arrangements by signing the enclosed copy of this letter and returning it to us as soon as convenient.

Should you have any questions, please feel free to give me a call.

Very truly yours,


Elaine Resko

ACKNOWLEDGED AND AGREED TO:

COMPANY: _____
NAME: _____
TITLE: _____
DATE: _____

HANLIN GROUP, INC.
RARITAN PLAZA II
CN #3106
EDISON, NEW JERSEY 08818
(201) 225-4840
FAX: (201) 225-6508

August 11, 1989

Dear Director of Marketing:

We are pleased to announce that Hanlin Group, Inc. is about to complete a corporate restructuring which will create two separate entities, Linchem, Inc. and Hanlin Group, Inc. Linchem, a newly-formed company, will be purchasing the potassium products business and assets from Hanlin. Debt financing for Linchem has been arranged, and equity for this acquisition will be provided by many of Hanlin's and Linchem's Management and the Regency Group, Inc., of Houston. As a result of the cash proceeds from the transaction and the restructuring of Hanlin's debt, Hanlin will emerge with a strong balance sheet, with substantially reduced debt and a substantial working capital line. Both companies will be strong and geared for profitable growth.

We value and want to preserve the many, good relationships we have with you and others in the business. We are striving for a smooth transition. Please call if you have any questions or concerns regarding this change.

Linchem, Inc. will concentrate on the continued development of the potassium products business being purchased from Hanlin. Linchem will be managed primarily by people presently in the potassium products business. George B. Ellas, presently Director - K Products Sales & Marketing, will become Vice President - Marketing & Sales, Glenn D. Carr, presently Plant Manager - Ashtabula, will become Vice President - Manufacturing and William K. Borland, presently Controller - Ashtabula, will become Vice President - Finance. Randall Hansen will leave his position as Chief Financial Officer of Hanlin and become President and Chief Executive Officer of Linchem. Michael N. Seitz will serve as Chairman of the Board of Linchem.

Linchem will invoice its potassium products customers and will receive and pay invoices from its suppliers. Linchem has negotiated a working capital line which will be used to support its inventory and receivable needs.

Some Hanlin Group and Linchem managers are individually investing in Linchem; in addition, all Linchem managers and employees will eventually have significant ownership in Linchem. Hanlin's manager's ownership of Hanlin is also being increased significantly, and Hanlin's present ESOP will continue. Thus, each of Hanlin Group, Inc. and Linchem, Inc. will have owners/managers teamed up with employee ESOP owners. You should anticipate even better service, reliability and performance.

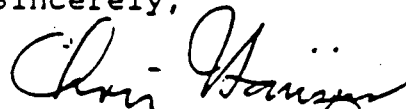
The "New" Hanlin Group, Inc. will be able to develop several business opportunities being afforded. Hanlin Group, Inc. will also concentrate on the continued modernization and growth of its existing Chemicals and Plastics businesses.

The foregoing strategic moves, coupled with continued implementation of the Quality Improvement Process, which started in January of 1988, will make both companies premier performers.

We are very pleased that we have been able to successfully reconfigure into two separate viable companies. The Hanlin team has worked hard and effectively to make this happen. We are all excited about the opportunities being afforded and look forward to continued business relationships with you, whether it be as Hanlin or Linchem.

Should you have any questions be sure to give one of us, or better yet, your normal contact, a call. He or she will be happy and able to answer your questions and explain the benefits of the change in more detail. As we get nearer to the closing date, you will receive more specific instructions with respect to invoicing and billing procedures for the two companies.

Sincerely,



Chris A. Hansen
Chairman



Randall W. Hansen
Vice President Finance

CAH/RWH/bm

ac - TW.
LINDE GASES OF THE MID-ATLANTIC, INC.

Headquarters: 308 Harper Drive
Moorestown, New Jersey 08057

May 16, 1989
lease file

Mr. Peter D. Moore
Vice-President, Transportation & Distribution
Hanlin Group Inc.
Raritan Plaza II
CN #3106
Edison, New Jersey 08818

Ref: Linden Lease

Dear Peter,

Enclosed for your files is a fully signed original of the Linden
lease amendments.

Very truly yours,

A. A. Galvan
A. A. Galvan
Operations manager

cc: ~~John Koch~~
V. A. Smith
J. R. Crane

LLAG516.doc

RECEIVED BY

MAY 17 1989

C. R. KOCH

GROUND LEASE

THIS LEASE, made as of the 1st day of May, 1987 between LCP CHEMICALS & PLASTICS, INC., a Delaware corporation, having an office located at Raritan Plaza II, Raritan Center, Box CN 3106, Edison, New Jersey 08818 (hereinafter referred to as "Landlord") and UNION CARBIDE CORPORATION, a New York Corporation, having an office at Old Ridgebury Road, Danbury, Connecticut 06817 (hereinafter referred to as "Tenant");

W I T N E S S E T H :

- - - - -

1. Landlord hereby leases unto Tenant and Tenant hires and takes from Landlord all that parcel of land situated along Linde Road in the City of Linden, County of Union, State of New Jersey, more particularly shown on Exhibit A attached hereto, being approximately 2.102 acres (hereinafter referred to as "Leased Land"), commencing on the effective date hereof and continuing for a period of two (2) years from such date. Rent shall be payable by Tenant to Landlord at monthly rate of Fifteen Hundred Dollars, (\$1,500.00) in advance on the first day of each month during the term hereof.

2. Tenant has, at its cost and expense, constructed on the Leased Land a building and facilities for the compressing, purifying repackaging and /or shipment of non-noxious gas and storage of same, including but not limited to hydrogen, Arygon, Oxygen, and blends. Tenant will make no structural alteration, changes or modifications in the building and facilities without the prior written approval of Landlord, which approval will not be unreasonably withheld. The building, facilities, equipment remain the property of Tenant and shall be deemed to be personal property although attached to the realty, subject, however, to all the other provisions of the Lease.

3. Tenant will use said building and facilities for the purpose of compressing, purifying, repackaging, and shipping of these compressed gases.

4. Tenant will obtain and maintain at its cost and expense, all approvals, licenses, permits and certificates required in connection with the use or operation of said buildings and facilities.

5. Throughout the term hereof Tenant will take good care of the Leased Land and at its own cost and expense will make as and when needed all repairs, whether such repairs are structural, ordinary or extraordinary, in and

about the Leased Land necessary to keep it in as good order and condition. Such repairs shall be, in quality and class, substantially equal to the original work and materials. Landlord may enter upon the Leased Land to inspect the premises during business hours. Tenant will keep the Leased Land clean and free of rubbish and refuse.

6. Tenant shall have the sole responsibility of maintaining the security of the buildings and facilities on the Leased Land and shall lock the buildings and gates during all periods when no personnel of Tenant are scheduled to be on duty. Landlord and Tenant shall arrange for Landlord's access to the property in the event of emergency during such absence of personnel.

7. Tenant will pay and discharge all mechanic liens, taxes and assessments for local improvements and payments of every nature and kind which may during the demised term be assessed, levied or imposed upon the Leased Land or any part thereof and the building and facilities located thereon. If Tenant fails to pay any such lien, tax or assessment when due, Landlord may pay the same including any interest or penalty and the same shall be come due and payable as additional rent on the first day of the month

after Landlord makes such payment. Landlord shall pay or reimburse Tenant the portion of all taxes and assessments on the Leased Land which are based on the unimproved value of the land itself. In the event that the improvements on the Leased Land do not constitute a separate tax lot for which a separate tax bill is rendered but forms part of a larger tax lot, which includes other property owned by the Landlord, the amount of tax or assessment or other payment attributable to the improvements on the Leased Land shall be determined in a manner reflecting proportionate share of such tax or assessment represented by such improvements.

8. Tenant will promptly comply, at its cost and expense, with all laws, ordinances, regulations and requirements of Local, State and Federal Governments, and all agencies and subdivisions thereof, and of all other departments, bureaus, officials, boards and commissions with regard to the Leased Land or the use and operation thereof by Tenant. If any such law, ordinance, regulation or requirement shall not be promptly complied with by Tenant, then Landlord may, at its option, upon reasonable prior notice to Tenant, enter upon the Leased Land to comply therewith, and should any fine or penalty be imposed for failure to comply therewith, or cost be incurred by Landlord in complying therewith, Tenant agrees that Landlord may, at

its option, pay such fine or penalty or incur such cost, which Tenant agrees to repay to Landlord with interest from the date of payment, as additional rent on the first day of the month after Landlord has paid such fine or penalty.

9. Landlord will maintain and keep Linde Road in good repair and apportion the cost of maintenance and repair among all the users thereof, except Consolidated Rail Corporation, on a fair and equitable basis having due regard to the amount of use and tonnage hauled over Linde Road by each user. Tenant will pay its proportionate share of such cost, with Tenant's share not to exceed Five Thousand Dollars (\$5,000.00) in any one year, payable within ten (10) days after receipt of Landlord's invoice therefor. Landlord shall be entitled to bill annually, semi-annually or quarterly, at its option.

10. Landlord grants to Tenant the right to maintain at Tenant's cost and expense an iron pipe from the Leased Land to the existing ditch north of the Leased Land for the discharge of process water. The location of said pipeline is indicated on Exhibit A attached hereto. Tenant will maintain said pipeline and keep it in good repair at its own cost and expense and upon the termination of this Lease for any reason shall surrender the said pipeline to Landlord.

If use of said pipeline or ditch is prohibited by any governmental authority or the discharge violates governmental standards, Tenant will be required to make its own provision for disposal of process water.

11. Landlord grants permission to Tenant to install and maintain a railroad siding and switch at the locations indicated on Exhibit A at Tenant's expense. Tenant shall bear the full cost and expense of maintenance of the side-track switch. Tenant agrees to use said siding for, and only for, one liquid hydrogen car at any one time, but only during emergency periods when Landlord cannot supply hydrogen gas to Tenant. Tenant also agrees to give Landlord advance notice when it expects to bring in liquid hydrogen and to keep the liquid hydrogen car on the siding enclosed in a fenced-in area.

12. In consideration of the Landlord's weighing of the Tenant's liquid trailers, Tenant will pay Twenty Dollars (\$20.00) per weigh within ten (10) days after receipt of Landlord's invoice therefor.

13. Tenant has constructed at Tenant's cost and expense a fence enclosing the Leased Land, and Tenant will not permit its employees, guests, agents, invitees, or licensees at any time to enter upon Landlord's property (other than the Leased Land and Linde Road marked on Exhibit

A) without first obtaining the consent of the Landlord. If any such persons do enter upon landlord's property, with or without Landlord's consent, Tenant will forever indemnify and save harmless Landlord from and against all liability, penalties, damages, expenses and judgments arising from injury or loss of life during the term hereof to any such persons and will forever indemnify Landlord for any damage to Landlord's property caused by any such persons while on Landlord's property.

14. Tenant will forever indemnify and save harmless Landlord from and against any and all liability, penalties, damages, expenses and judgments arising from (a) personal injury to or loss of life of third parties, (b) damage to property of third parties during the term hereof of any nature, sustained in or about the Leased Land, and (c) and matter or thing growing out of the occupation and use of the Leased Land and asserted against Landlord by a third party by reason of its ownership of the Leased Land or for any other reason, and which is (i) not caused by negligence of Landlord, and (ii) occasioned wholly or in part by an act or omission of Tenant, or of its employees, contractors, guests, agents, invitees, licensees or assigns.

15. If at any time during the continuance of this Lease the grade of any street or highway near or adjacent to the Leased Land shall be changed pursuant to any order which may be made by the State of New Jersey or by the Board of Public Utility Commissioners or by other lawful authority, Tenant agrees to waive and release any claim or damages whatsoever which it may have by reason of any and all injury or damage caused by or resulting from said change of grade.

16. If the building and/or facilities located on the Leased Land are partially damaged by fire, explosion, flood, earthquake, riot, civil commotion, storm or other casualty, Tenant will repair such damage at its costs and expense and restore the Leased Land to its former condition as expeditiously and promptly as possible. Plans and specifications for such repairs will be submitted by Tenant to Landlord for approval prior to the work being done and Landlord shall not unreasonably withhold or delay such approval. If the Leased Land is damaged by fire, explosion, flood, earthquake, riot, civil commotion, storm or other casualty to an extent which substantially destroys the building and facilities and requires their reconstruction to permit their use as herein provided, Tenant within thirty (30) days after the occurrence of any such event will advise Landlord in writing of its election to reconstruct the building and facilities or to vacate the Leased Land. If

Tenant elects to vacate, it will remove from the Leased Land all of its property and restore the Leased Land to the condition existing prior to Tenant's construction described in Paragraph 2 hereof, except for the removal of piling, within a reasonable period after giving such notice. If Tenant elects to reconstruct the building and facilities, it will perform such work as expeditiously and promptly as possible.

17. Upon the expiration or other termination of this Lease for any reason Tenant shall vacate or surrender to Landlord free and clear of all encumbrances of liens the building and facilities (exclusive of equipment and machinery) located on the Leased Land except that Tenant will remove Tenant's equipment, machinery, personal property and tools. Tenant shall execute such instruments or writings as may be deemed necessary to properly effect the surrender of said building and facilities and their transfer to Landlord; and such building and facilities will be surrendered in good order or condition, reasonable wear and tear excepted. Upon such surrender, said building and facilities shall, without cost or charge to Landlord, become the property of Landlord, free of all liens and claims of Tenant and others.

18. In the event that Landlord elects to sell the Leased Land, Landlord shall give Tenant written notice of such intent, and if Tenant wishes to purchase the Leased Land, it shall so notify Landlord in writing within thirty (30) days after receipt of such notice, and the parties shall negotiate in good faith an acceptable purchase price and payment terms.

In the event that Landlord and Tenant do not execute a suitable agreement setting forth the conditions of sale, including price, within sixty (60) days after Landlord's notice of intent to Tenant, then Tenant's purchase rights hereunder shall automatically expire.

19. Not less than thirty (30) days prior to the expiration of the term hereof, Tenant may notify Landlord that it wishes to continue to lease the Leased Land or to purchase the Leased Land. Thereupon the parties shall negotiate in good faith such continued lease or purchase upon mutually acceptable terms. If, after good faith negotiations, the parties are unable to agree upon mutually acceptable terms for such lease or purchase prior to the expiration of the term hereof, the parties shall have no further obligations hereunder.

20. Tenant shall not, without the prior written
consent of Landlord,

(a) assign or transfer, by operation of law or otherwise, this Lease or any interest therein,

(b) underlet the Leased Land or any part thereof,

(c) mortgage or encumber the same, or

(d) permit the same to be occupied by anyone other than Tenant or Tenant's officers or employees.

21. Landlord covenants that if Tenant shall duly keep and perform all the conditions hereof, Tenant shall peaceably and quietly have, hold and enjoy the Leased Land for the term hereof.

22. If there be a default in any of the covenants herein contained, upon twenty (20) days' prior written notice to Tenant specifying the nature of such default (during which period Tenant shall have the right to cure such default) Landlord shall have the right to re-enter the Leased Land and to have, repossess and enjoy same, provided that Tenant has not duly cured said default during such notice period.

23. It is expressly understood and agreed that in case the Leased Land shall be abandoned, or if default continues in the payment of the rent or any part thereof as herein specified after fifteen (15) days' written notice from Landlord, or if, without the consent of Landlord, Tenant shall sell, assign, or mortgage this Lease or any part

thereof, or underlet the Leased Land or any part thereof, or if default continues in the performance of any of the covenants and agreements in this Lease contained on the part of the Tenant to be kept and performed after twenty (20) days' prior written notice from Landlord, Landlord may, if Landlord so elects, at any time thereafter terminate this Lease and the term thereof, upon giving to Tenant five (5) days' notice in writing of Landlord's intention so to do, and upon the giving of such notice, this Lease and the term thereof shall terminate, expire and come to an end on the date fixed in such notice as if said date were the date originally fixed in this Lease for the termination or expiration thereof.

24. In the event the Leased Land or any part thereof be condemned for public use, then in that event, upon the taking of the same for such public use, this Lease, at the option of the Tenant, shall become null and void, and the term shall cease and come to an end upon the date when the same shall be taken and the rent shall be apportioned as of said date. No part of any award, however, shall belong to the Tenant, except that amount which is granted for building and facilities constructed by Tenant.

25. This Lease is, and shall be, subject and subordinate in all respects to all mortgages and liens of any kind which may now or hereafter affect the Leased land or the real property of which the Leased Land forms a part, and to

all renewals, modifications, consolidations, replacements and extensions thereof; provided, however, that Landlord shall obtain agreement from any such mortgage or lienor that for so long as Tenant is not in default hereunder, (i) Tenant shall peaceably and quietly have, hold and enjoy the Leased Land for the term hereof, and (ii) any such mortgagee or lienor shall have no right, lien, encumbrance or security interest in any machinery or equipment (including fixtures) which is attached or made a part of the Leased Land or any buildings or improvements constructed thereon by Tenant. Tenant shall, in confirmation thereof, execute promptly any certificate or certificates Landlord may reasonably request in that connection.

26. Landlord shall have no obligation hereunder to supply, or pay for, any heat, fuel, electricity or water, or any equipment, therefor or any Sewage, or other waste disposal pipes or equipment, or any other utility or service of any kind.

27. The covenants and agreements herein contained are binding on the parties hereto and upon their respective successors and permitted assigns.

28. Words used in the singular shall include words in the plural where the text of this instrument so requires.

IN WITNESS WHEREOF, the parties have executed this Lease by their duly authorized officers and caused their corporate seals to be hereto affixed, the day and year first above written.

Attach.

LCP CHEMICALS & PLASTICS, INC.

By:

Peter D. Moore

Director

Title: Transportation & Distribution

UNION CARBIDE CORPORATION

By:

William J. Kogler WSK
CFR
JGL

Title: Director of Marketing

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all right

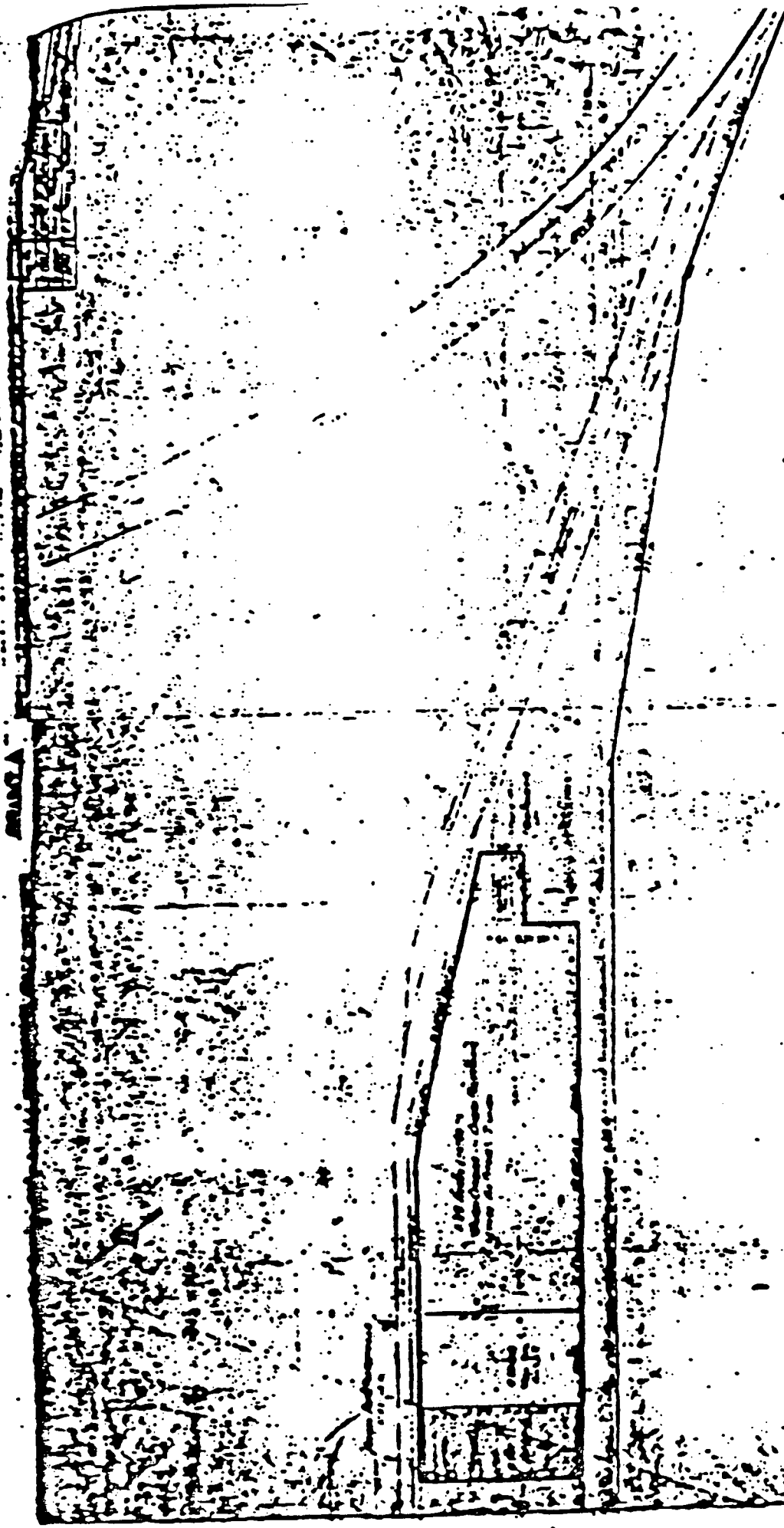


EXHIBIT A

LINDE GASES OF THE MID-ATLANTIC, INC.
308 Harper Drive
Moorestown, New Jersey 08057
609-778-6200

April 11, 1989

LCP Chemicals & Plastics, Inc.
Raritan Plaza II
Raritan Center
Edison, New Jersey 08818

Gentlemen:

now LCP Chemicals NJ, Division of Hanlin Group, Inc. *RM*
Reference is made to the Ground Lease dated as of May 1, 1987 *OK*
(the "Lease") between LCP Chemicals & Plastics, Inc. ("Landlord")
and Union Carbide Industrial Gases, Inc., as successor to Union
Carbide Corporation ("Tenant"), for certain land situated in
Linden, New Jersey (the "Leased Land").

Landlord and Tenant hereby amend the Lease as follows:

1. The term shall be extended to expire on November 30, 1990;
provided, however, that Tenant shall have the option to extend the
term of the Lease for an additional period of two (2) years,
commencing December 1, 1990 and terminating November 30, 1992,
upon the same terms and conditions as set forth in the Lease, as
modified herein, provided that Tenant gives written notice to
Landlord of Tenant's exercise of said option not later than
September 30, 1990.
2. Effective as of the date hereof, Tenant hereby grants to
Landlord the exclusive use for truck parking and staging for
adjacent terminaling operations of that part of the Leased Land as
shown on Exhibit A attached hereto (the "LCP Area"), subject to
the right of Tenant to use the LCP Area for pedestrian and
vehicular access to the remainder of the Leased Land; provided,
however, that Landlord shall be solely and exclusively liable for
(i) any claims, damages, loss or liability arising out of its use
of the LCP Area, and (ii) complying with all Environmental Cleanup
Responsibility Act (N.J.S.A. 13:1K-G et seq.) requirements and
regulations and other governmental requirements and compliance
obligations due to its use of the LCP Area, including without
limitation satisfying and discharging Tenant's obligations under
Paragraph 8 of the Lease.
3. Upon the expiration or other termination of the Lease,
Tenant shall have an additional period up to 180 days to remove
any building, facilities, or equipment belonging to it from the
Leased Land. Subject to Paragraph 17 of the lease. *RM*

LCP Chemicals & Plastics, Inc.
Page 2
April 11, 1989

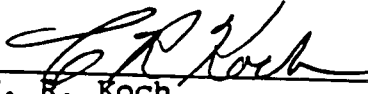
4. Upon the execution hereof, at its sole cost and expense, Tenant shall relocate certain fencing to the location as shown on Exhibit B attached hereto.

5. Except as otherwise set forth herein, the Lease shall remain in full force and effect.

If the foregoing is acceptable to you, kindly execute the duplicate of this letter in the space provided below and return the same to the undersigned.


Very truly yours,

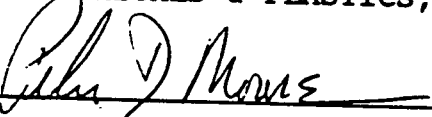
UNION CARBIDE INDUSTRIAL
GASES, INC.



C. R. Koch
President
Linde Gases of the Mid-Atlantic

Agreed to and Accepted:

(formerly) LCP Chemicals NJ, Division of Hanlin Group, Inc. 
LCP CHEMICALS & PLASTICS, INC.

By 

Title Vice President

CRK:jge
041189.CRK

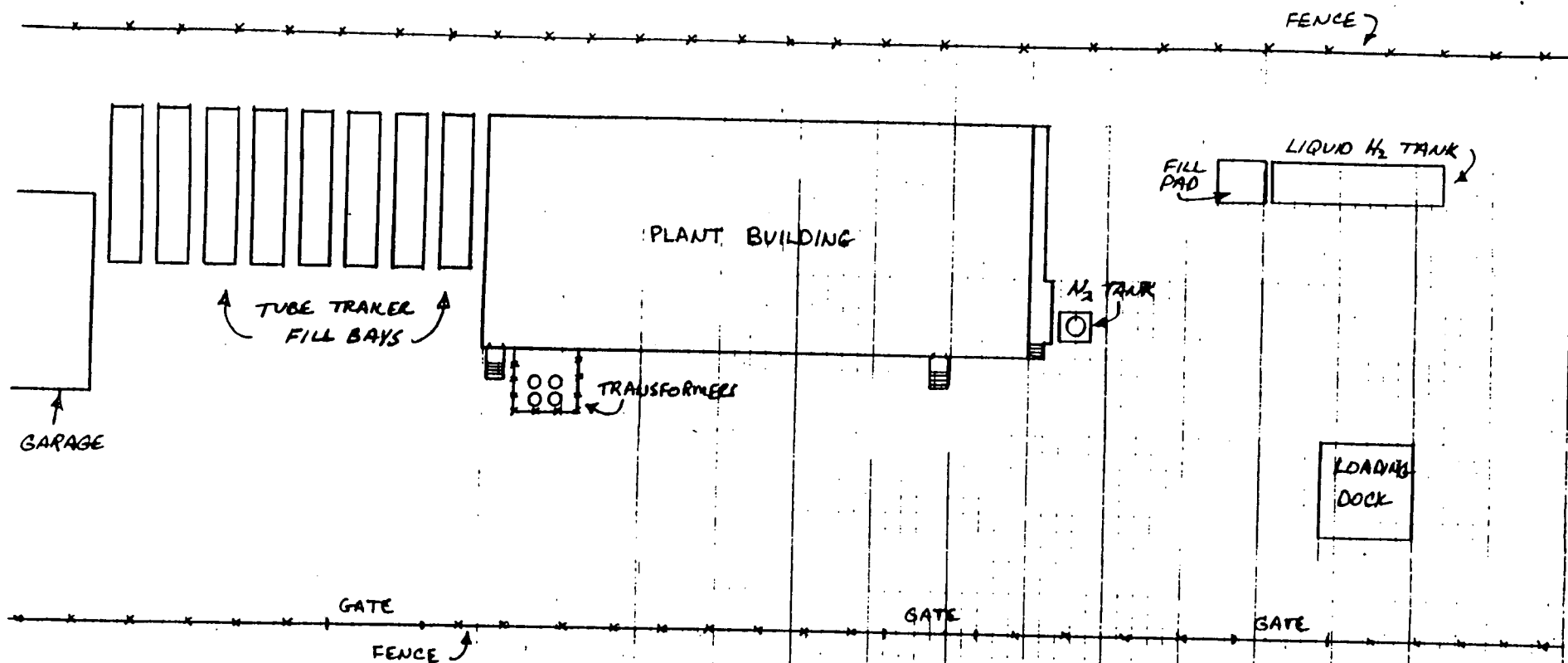


EXHIBIT A

UNION CARBIDE CORPORATION, LINDE DIVISION	
SITE PLAN FOR: <u>LINDEN PLANT</u>	
<u>EXISTING LAYOUT</u>	
TYPE UNIT _____	
Drawn By: <u>D. Renner</u>	Date: <u>4/3/89</u> Scale 1" = <u>80'</u>

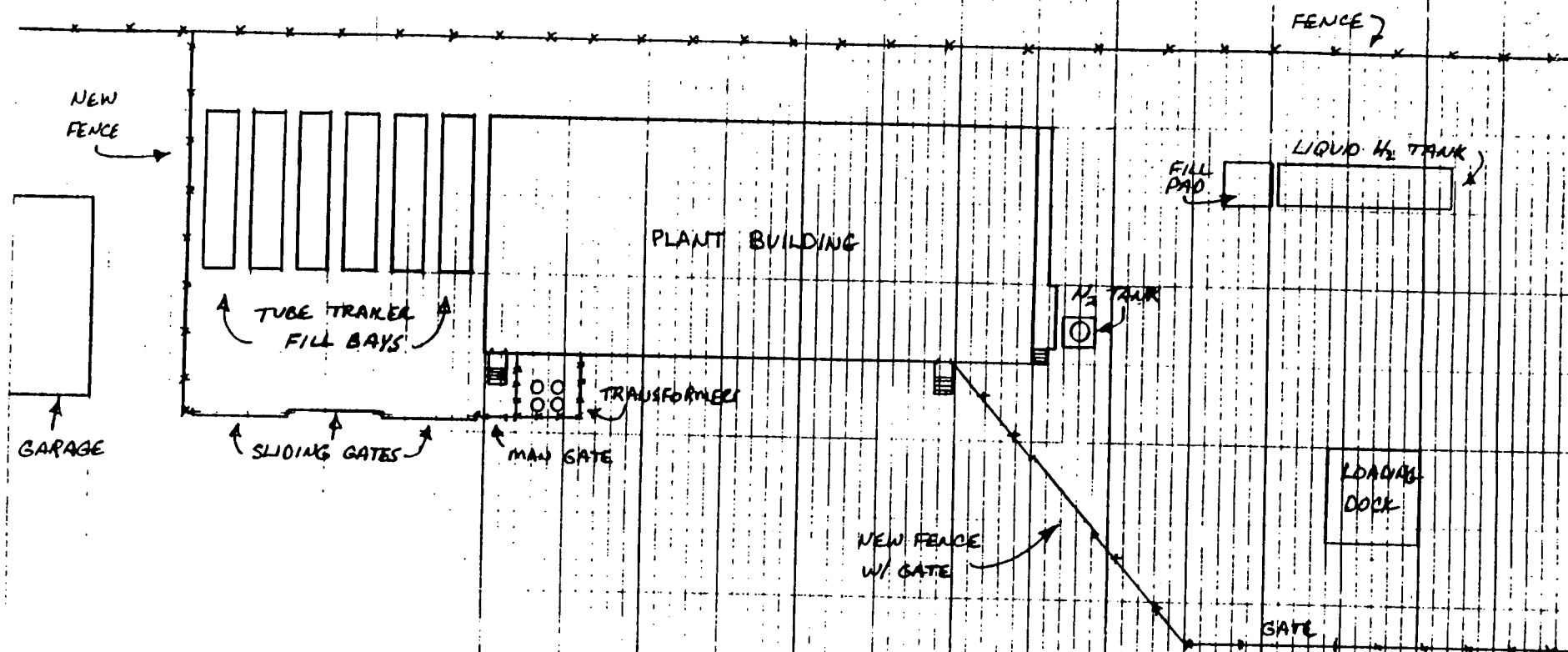


EXHIBIT B

UNION CARBIDE CORPORATION, UNDE DIVISION
SITE PLAN FOR: LINDEN PLANT
PROPOSED LAYOUT

TYPE UNIT

Drawn By: D. Renner Date: 4/3/89 Scale 1" = 80'

UNION CARBIDE CORPORATION
Linde Division
R3697

39 Old Ridgebury Road
Danbury, CT 06817-0001

31 October 1985

RECEIVED
NOV 8 1985
N.A. DiFRANCO

ICC VAS

TO: Mr. N. DiFranco
Linde
Somerset, New Jersey

CC: Messrs. J. G. Lee - R3701
J. S. Pirretti - Moorestown

SUBJECT: Linden Lease Obligations

Attached is the Linden Lease we discussed. The operative paragraph is #17, I believe, whereby we surrender the land and buildings free and clear upon termination and remove only our equipment. Keep me posted on your review.



E. M. Chiverton

/kc
Attachment

GROUND LEASE

THIS LEASE, made as of the 1st day of May, 1985 between LCP CHEMICALS & PLASTICS, INC., a Delaware corporation, having an office located at Raritan Plaza II, Raritan Center, Edison, New Jersey 08837 (hereinafter referred to as "Landlord") and UNION CARBIDE CORPORATION, a New York corporation, having an office at Old Ridgebury Road, Danbury, Connecticut 06817 (hereinafter referred to as "Tenant");

W I T N E S S E T H:

1. Landlord hereby leases unto Tenant and Tenant hires and takes from Landlord all that parcel of land situated along Linde Road in the City of Linden, County of Union, State of New Jersey, more particularly shown on Exhibit A attached hereto, being approximately 2.102 acres (hereinafter referred to as "Leased Land"), commencing on the effective date hereof and continuing for a period of two (2) years from such date. Rent shall be payable by Tenant to Landlord at monthly rate of Fifteen Hundred Dollars (\$1,500.00) in advance on the first day of each month during the term hereof.

2. Tenant has, at its cost and expense, constructed on the Leased Land a building and facilities for the compressing, purifying and shipment of hydrogen gas and storage of liquid hydrogen. Tenant will make no structural alteration, changes or modifications in the building and facilities without the prior written approval of Landlord, which approval will not be unreasonably withheld. The building, facilities, equipment and machinery placed by Tenant on the Leased Land shall remain the property of Tenant and shall be deemed to be

personal property although attached to the realty, subject, however, to ~~all the other provisions~~ of this Lease.

3. Tenant will use said building and facilities for the purpose of compressing, purifying and shipping hydrogen gas, the storage and shipment of liquid hydrogen and for the preparation of gas mixtures consisting chiefly of hydrogen mixed with minor amounts of other gases (which other gases shall be non-hazardous) and for no other purpose.

4. Tenant will obtain and maintain at its cost and expense, all approvals, licenses, permits and certificates required in connection with the use or operation of said building and facilities.

5. Throughout the term hereof Tenant will take good care of the Leased Land and at its own cost and expense will make as and when needed all repairs, whether such repairs are structural, ordinary or extraordinary, in and about the Leased Land necessary to keep it in good order and condition. Such repairs shall be, in quality and class, substantially equal to the original work and materials. Landlord may enter upon the Leased Land to inspect the premises during business hours. Tenant will keep the Leased Land clean and free of rubbish and refuse.

6. Tenant shall have the sole responsibility of maintaining the security of the buildings and facilities on the Leased Land and shall lock the buildings and gates during all periods when no personnel of Tenant are scheduled to be on duty. Landlord and Tenant shall arrange for Landlord's access to the property in the event of emergency during such absence of personnel.

7. Tenant will pay and discharge all mechanics liens, taxes and assessments for local improvements and payments of every nature and kind which may during the demised term be assessed, levied or imposed upon the Leased Land or any part thereof and the building and facilities located thereon. If Tenant fails to pay any such lien, tax or assessment when due, Landlord may pay the same including any interest or penalty and the same shall become due and payable as additional rent on the first day of the month after Landlord makes such payment. Landlord shall pay or reimburse Tenant the portion of all taxes and assessments on the Leased Land which are based on the unimproved value of the land itself. In the event that the improvements on the Leased Land do not constitute a separate tax lot for which a separate tax bill is rendered but forms part of a larger tax lot, which includes other property owned by the Landlord, the amount of tax or assessment or other payment attributable to the improvements on the Leased Land shall be determined in a manner reflecting proportionate share of such tax or assessment represented by such improvements.

8. Tenant will promptly comply, at its cost and expense, with all laws, ordinances, regulations and requirements of Local, State and Federal Governments, and all agencies and subdivisions thereof, and of all other departments, bureaus, officials, boards and commissions with regard to the Leased Land or the use and operation thereof by Tenant. If any such law, ordinance, regulation or requirement shall not be promptly complied with by Tenant, then Landlord may, at its option, upon reasonable prior notice to Tenant, enter upon the Leased Land to comply therewith, and should any fine or penalty be imposed for failure

to comply therewith, or cost be incurred by Landlord in complying therewith, Tenant agrees that Landlord may, at its option, pay such fine or penalty or incur such cost, which Tenant agrees to repay to Landlord with interest from the date of payment, as additional rent on the first day of the month after Landlord has paid such fine or penalty.

9. Landlord will maintain and keep Linde Road in good repair and apportion the cost of maintenance and repair among all the users thereof, except Consolidated Rail Corporation, on a fair and equitable basis having due regard to the amount of use and tonnage hauled over Linde Road by each user. Tenant will pay its proportionate share of such cost, with Tenant's share not to exceed Five Thousand Dollars (\$5,000.00) in any one year, payable within ten (10) days after receipt of Landlord's invoice therefor. Landlord shall be entitled to bill annually, semi-annually or quarterly, at its option.

10. Landlord grants to Tenant the right to maintain at Tenant's cost and expense an iron pipe from the Leased Land to the existing ditch north of the Leased Land for the discharge of process water. The location of said pipeline is indicated on Exhibit A attached hereto. Tenant will maintain said pipeline and keep it in good repair at its own cost and expense and upon the termination of this Lease for any reason shall surrender the said pipeline to Landlord. If use of said pipeline or ditch is prohibited by any governmental authority or the discharge violates governmental standards, Tenant will be required to make its own provision for disposal of process water.

11. Landlord grants permission to Tenant to install and maintain a railroad siding and switch at the locations indicated on Exhibit A at

Tenant's expense. Tenant shall bear the full cost and expense of maintenance of the side-track switch. Tenant agrees to use said siding for, and only for, one liquid hydrogen car at any one time, but only during emergency periods when Landlord cannot supply hydrogen gas to Tenant. Tenant also agrees to give Landlord advance notice when it expects to bring in liquid hydrogen and to keep the liquid hydrogen car on the siding enclosed in a fenced-in area.

12. In consideration of the Landlord's weighing of the Tenant's liquid trailers, Tenant will pay Twenty Dollars (\$20.00) per weigh within ten (10) days after receipt of Landlord's invoice therefor.

13. Tenant has constructed at Tenant's cost and expense a fence enclosing the Leased Land, and Tenant will not permit its employees, guests, agents, invitees, or licensees at any time to enter upon Landlord's property (other than the Leased Land and Linde Road marked on Exhibit A) without first obtaining the consent of the Landlord. If any such persons do enter upon Landlord's property, with or without Landlord's consent, Tenant will forever indemnify and save harmless Landlord from and against all liability, penalties, damages, expenses and judgments arising from injury or loss of life during the term hereof to any such persons and will forever indemnify Landlord for any damage to Landlord's property caused by any such persons while on Landlord's property.

14. Tenant will forever indemnify and save harmless Landlord from and against any and all liability, penalties, damages, expenses and judgments arising from (a) personal injury to or loss of life of third parties, (b) damage to property of third parties during the term hereof

of any nature, sustained in or about the Leased Land, and (c) and matter or thing growing out of the occupation and use of the Leased Land and asserted against Landlord by a third party by reason of its ownership of the Leased Land or for any other reason, and which is (i) not caused by negligence of Landlord, and (ii) occasioned wholly or in part by an act or omission of Tenant, or of its employees, contractors, guests, agents, invitees, licensees or assigns.

15. If at any time during the continuance of this Lease the grade of any street or highway near or adjacent to the Leased Land shall be changed pursuant to any order which may be made by the State of New Jersey or by the Board of Public Utility Commissioners or by other lawful authority, Tenant agrees to waive and release any claim or damages whatsoever which it may have by reason of any and all injury or damage caused by or resulting from said change of grade.

16. If the building and/or facilities located on the Leased Land are partially damaged by fire, explosion, flood, earthquake, riot, civil commotion, storm or other casualty, Tenant will repair such damage at its costs and expense and restore the Leased Land to its former condition as expeditiously and promptly as possible. Plans and specifications for such repairs will be submitted by Tenant to Landlord for approval prior to the work being done and Landlord shall not unreasonably withhold or delay such approval. If the Leased Land is damaged by fire, explosion, flood, earthquake, riot, civil commotion, storm or other casualty to an extent which substantially destroys the building and facilities and requires their reconstruction to permit their use as herein provided, Tenant within thirty (30) days after the occurrence of any such event will advise

Landlord in writing of its election to reconstruct the building and facilities or to vacate the Leased Land. If Tenant elects to vacate, it will remove from the Leased Land all of its property and restore the Leased Land to the condition existing prior to Tenant's construction described in Paragraph 2 hereof, except for the removal of piling, within a reasonable period after giving such notice. If Tenant elects to reconstruct the building and facilities, it will perform such work as expeditiously and promptly as possible.

17. Upon the expiration or other termination of this Lease for any reason Tenant shall vacate or surrender to Landlord free and clear of all encumbrances of liens the building and facilities (exclusive of equipment and machinery) located on the Leased Land except that Tenant will remove Tenant's equipment, machinery, personal property and tools. Tenant shall execute such instruments or writings as may be deemed necessary to properly effect the surrender of said building and facilities and their transfer to Landlord; and such building and facilities will be surrendered in good order or condition, reasonable wear and tear excepted. Upon such surrender, said building and facilities shall, without cost or charge to Landlord, become the property of Landlord, free of all liens and claims of Tenant and others.

18. In the event that Landlord elects to sell the Leased Land, Landlord shall give Tenant written notice of such intent, and if Tenant wishes to purchase the Leased Land, it shall so notify Landlord in writing within thirty (30) days after receipt of such notice, and the parties shall negotiate in good faith an acceptable purchase price and payment terms. In the event that Landlord and Tenant do not execute a suitable

agreement setting forth the conditions of sale, including price, within sixty (60) days after Landlord's notice of intent to Tenant, then Tenant's purchase rights hereunder shall automatically expire.

19. Not less than thirty (30) days prior to the expiration of the term hereof, Tenant may notify Landlord that it wishes to continue to lease the Leased Land or to purchase the Leased Land. Thereupon the parties shall negotiate in good faith such continued lease or purchase upon mutually acceptable terms. If, after good faith negotiations, the parties are unable to agree upon mutually acceptable terms for such lease or purchase prior to the expiration of the term hereof, the parties shall have no further obligations hereunder.

20. Tenant shall not, without the prior written consent of Landlord,

(a) assign or transfer, by operation of law or otherwise, this Lease or any interest therein,

(b) underlet the Leased Land or any part thereof,

(c) mortgage or encumber the same, or

(d) permit the same to be occupied by anyone other than Tenant or Tenant's officers or employees.

21. Landlord covenants that if Tenant shall duly keep and perform all the conditions hereof, Tenant shall peaceably and quietly have, hold and enjoy the Leased Land for the term hereof.

22. If there be a default in any of the covenants herein contained, upon twenty (20) days' prior written notice to Tenant specifying the nature of such default (during which period Tenant shall have the

right to cure such default) Landlord shall have the right to re-enter the Leased Land and to have, repossess and enjoy same, provided that Tenant has not duly cured said default during such notice period.

23. It is expressly understood and agreed that in case the Leased Land shall be abandoned, or if default continues in the payment of the rent or any part thereof as herein specified after fifteen (15) days' written notice from Landlord, or if, without the consent of Landlord, Tenant shall sell, assign, or mortgage this Lease or any part thereof, or underlet the Leased Land or any part thereof, or if default continues in the performance of any of the covenants and agreements in this Lease contained on the part of the Tenant to be kept and performed after twenty (20) days' prior written notice from Landlord, Landlord may, if Landlord so elects, at any time thereafter terminate this Lease and the term thereof, upon giving to Tenant five (5) days' notice in writing of Landlord's intention so to do, and upon the giving of such notice, this Lease and the term thereof shall terminate, expire and come to an end on the date fixed in such notice as if said date were the date originally fixed in this Lease for the termination or expiration thereof.

24. In the event the Leased Land or any part thereof be condemned for public use, then in that event, upon the taking of the same for such public use, this Lease, at the option of the Tenant, shall become null and void, and the term shall cease and come to an end upon the date when the same shall be taken and the rent shall be apportioned as of said date. No part of any award, however, shall belong to the Tenant, except that amount which is granted for

building and facilities constructed by Tenant.

25. This Lease is, and shall be, subject and subordinate in all respects to all mortgages and liens of any kind which may now or hereafter affect the Leased Land or the real property of which the Leased Land forms a part, and to all renewals, modifications, consolidations, replacements and extensions thereof; provided, however, that Landlord shall obtain agreement from any such mortgagee or lienor that for so long as Tenant is not in default hereunder, (i) Tenant shall peaceably and quietly have, hold and enjoy the Leased Land for the term hereof, and (ii) any such mortgagee or lienor shall have no right, lien, encumbrance or security interest in any machinery or equipment (including fixtures) which is attached or made a part of the Leased Land or any buildings or improvements constructed thereon by Tenant. Tenant shall, in confirmation thereof, execute promptly any certificate or certificates Landlord may reasonably request in that connection.

26. Landlord shall have no obligation hereunder to supply, or pay for, any heat, fuel, electricity or water, or any equipment therefor, or any sewage, or other waste, disposal pipes or equipment, or any other utility or service of any kind.

27. The covenants and agreements herein contained are binding on the parties hereto and upon their respective successors and permitted assigns.

28. Words used in the singular shall include words in the plural where the text of this instrument so requires.

IN WITNESS WHEREOF, the parties have executed this Lease by their duly authorized officers and caused their corporate seals to be hereto affixed, the day and year first above written.

LCP CHEMICALS & PLASTICS, INC.

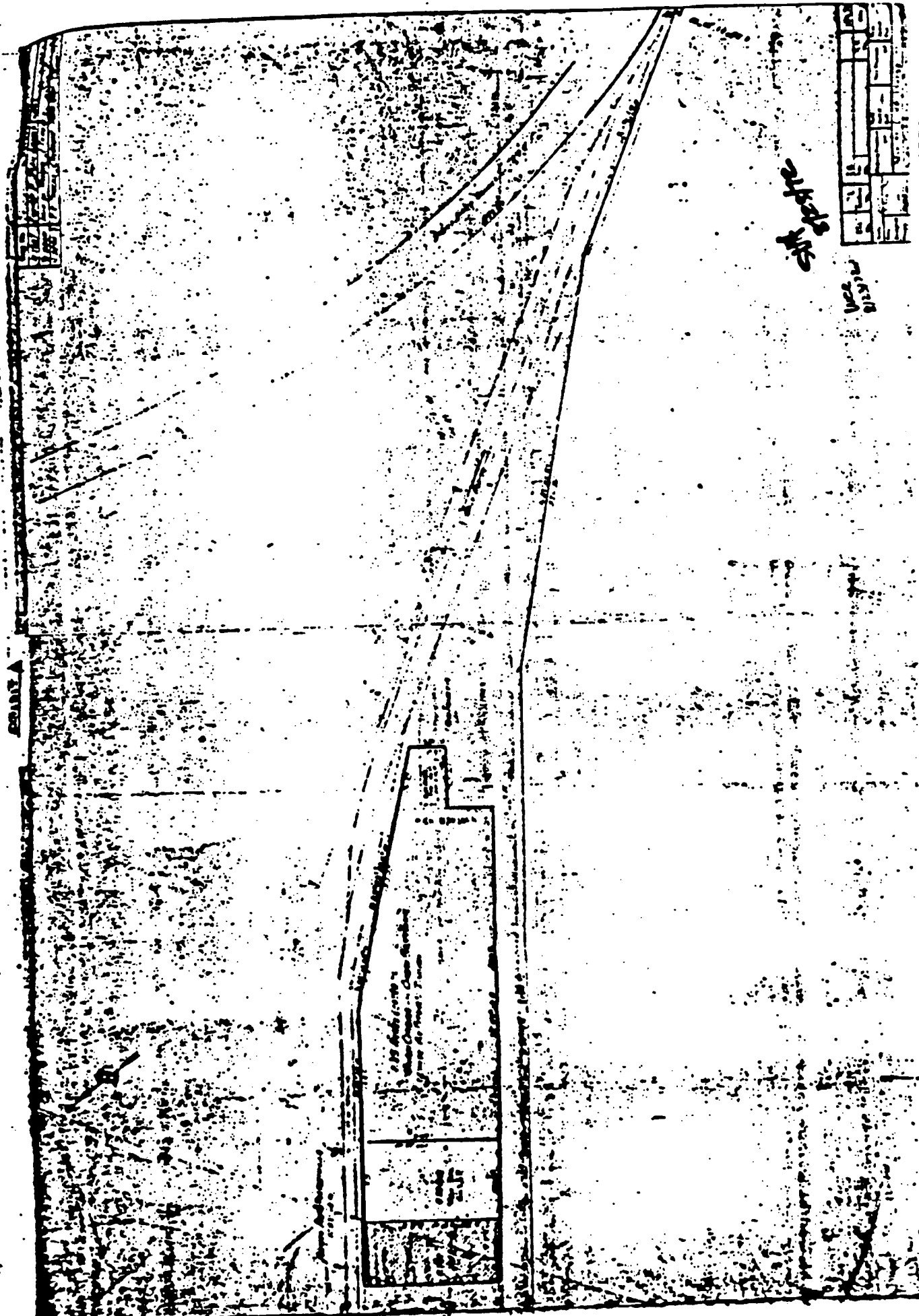
By WC Colbert. Jr

Title Vice Chairman

UNION CARBIDE CORPORATION

By Paul J. Bild *Emc*

Title Manager, Process Gases



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AGREEMENT made as of August 23, 1972, between LINDEN CHLORINE PRODUCTS INC., a Delaware corporation, having a mailing address at P.O. Box 484, Linden, New Jersey 07036 (herein called "Linden"), and UNION CARBIDE CORPORATION, a New York corporation having an office at 270 Park Avenue, New York, New York 10017 (herein called "Union Carbide");

W I T N E S S E T H:

WHEREAS, Linden operates a Caustic Chlorine Plant at Linden, New Jersey which produces hydrogen as a by-product at a rated capacity of 78,000,000 standard cubic feet per month, and Union Carbide operates a plant to purify, compress and ship hydrogen on land adjacent to Linden's Caustic Chlorine Plant;

WHEREAS, Linden is leasing certain real property to Union Carbide under lease agreement of even date herewith (hereinafter referred to as the "Leased Land"); and

WHEREAS, Union Carbide desires Linden to supply Union Carbide with hydrogen, steam and fresh and brackish water, and Linden is willing to do so.

NOW, THEREFORE, the parties agree as follows:

1. Union Carbide has heretofore constructed a plant to purify, compress and ship hydrogen, a storage facility to store liquid hydrogen, and four (4) pipelines, one capable of receiving at least 56,000 standard cubic feet of hydrogen per hour, the second capable of receiving steam at 90 psig in amounts up to

1,500 pounds per hour, the third capable of receiving brackish water at 60 psig at rates up to 200 GPM, and the fourth capable of receiving fresh water at 60 psig at rates up to 50 gallons per minute.

2. Linden has a hydrogen pipeline, capable of delivering at least 56,000 standard cubic feet of hydrogen per hour, from Linden's Caustic Chlorine Plant to a point, as shown on Exhibit A, on or near the boundary of the Leased Land to Union Carbide hereunder where it connects to the hydrogen pipeline constructed by Union Carbide.

3. Linden will install meters at Linden's expense to measure hydrogen, steam and fresh water on the hydrogen, steam and fresh water pipelines. Union Carbide shall have the right to inspect said meters during normal business hours at reasonable intervals from time to time upon notice, oral or written, to Linden. No meter will be installed to measure brackish water.

4. Should a larger compressor and motor than that presently provided be required for the transmission of hydrogen from Linden's Caustic Chlorine Plant through the hydrogen pipeline, Union Carbide will provide such larger compressor and motor, at its expense, and pay the cost of the additional power and water required for its operation. Linden will install and maintain said compressor and motor and on termination of this Agreement for any reason, they will become and remain the property of Linden.

5. Union Carbide shall maintain controls to prevent their compressors (as distinguished from the compressor mentioned in paragraph 4) from withdrawing hydrogen from the supply line when the line pressure is less than 2 inches of water.

6. Union Carbide will maintain the pipelines on the Leased Land by it and Linden will maintain the pipelines on its land in good condition and repair, and free from leaks, obstructions and constrictions throughout the term of this Agreement.

7. Title to the pipelines constructed on land of Linden will be vested in Linden and those constructed on the Leased Land to Union Carbide will be vested in Union Carbide, while this Agreement is in effect. Upon termination of this Agreement for any reason, all the pipelines will become and remain the property of Linden.

8. Union Carbide will indemnify and save Linden harmless against any loss or liability for any injuries, losses or damages to the property of Linden, Union Carbide or any other person, firm or corporation, or to any person or persons, or for any claim of any nature or character whatsoever in connection with, arising out of, or attributable to, the maintenance and operation of said pipelines on Leased Land by Union Carbide unless due to the negligence of Linden. Each party hereto waives all claims against the other party for damage to its property located in the Tremley Point area in the eastern part of Linden, New Jersey, caused by fire or explosion and agrees to obtain from its insur-

ance carrier a waiver of subrogation rights against the other party.

9. Union Carbide shall not acquire any property right (except such rights as it derives from its status as lessee) in or over the land traversed by the said pipelines other than a license which may be revoked by Linden forthwith, subject to the provisions of paragraph 24 hereof, if this Agreement or the lease between the parties is terminated for any reason whatsoever. Linden reserves the right to relocate any or all of such pipelines at its expense if, in its opinion, the future use of any of Linden's land requires such relocation.

10. The word "hydrogen" means chlorine cell hydrogen saturated with water vapor and containing certain residual mercury vapor. Union Carbide reserves the right to reject, without penalty, hydrogen which does not analyze at least 99.9% hydrogen on a dry basis. In the event government regulations require the removal of mercury from hydrogen, Linden agrees to install and operate at its expense, equipment to accomplish said removal if economically feasible.

11. The words "standard cubic foot" means that quantity of hydrogen, which on a dry basis, at 70°F. and at a pressure of 760 mm of mercury occupies one cubic foot.

12. Union Carbide will purchase and take from Linden, subject to paragraph 19 of this Agreement, not less than 12,000,000 standard cubic feet of hydrogen per month. Linden will supply to

Union Carbide up to 50,000,000 standard cubic feet of hydrogen per month provided Linden shall be required to deliver hydrogen at a rate of at least 54,000 standard cubic feet per hour. If Linden has additional hydrogen available, Linden shall deliver the amount of hydrogen provided for in this paragraph at such rate as the capabilities of the existing pipeline and blowers permit. Linden's obligation to deliver hydrogen under any provisions of this Agreement is subject to the provisions of paragraph 17 of this Agreement.

13. The price of hydrogen shall be fifty cents (\$0.50) for each 1,000 standard cubic feet purchased in each month up to 50,000,000 standard cubic feet. Terms of payment shall be thirty (30) days from date of invoice.

★ 14. In the event that Linden has hydrogen available for sale in excess of that required to supply the requirements hereof and Linden sells hydrogen produced as a by-product of its Caustic Chlorine Plant at Linden, New Jersey, to any customer for resale, other than Union Carbide, at a lower price and/or more favorable terms it shall offer such lower price and/or more favorable terms to Union Carbide for the quantity purchased under this Agreement.

15. The price of hydrogen shall be subject to increase or decrease on April 1 in each year in direct proportion to the increase or decrease, if any, in the average of the monthly "Wholesale Price Index of Industrial Chemical Prices" published

by the Bureau of Labor Statistics, United States Department of Labor for the calendar year immediately preceding January 1 in each year, above or below the average of the monthly index for the year 1972.

16. On or before the 10th day of each month, Union Carbide shall furnish to Linden a report showing the volume of hydrogen compressed in Union Carbide's cylinders and receivers during the immediately preceding month. Such report shall be supported by Union Carbide's daily compression reports. The volume of hydrogen so packed shall be deemed to be the volume of hydrogen delivered hereunder. Linden, however, shall have the right at any time and at its expense to install appropriate metering equipment at the interface of the hydrogen pipeline located on Linden's property and the hydrogen pipeline located on the Leased Land for measuring the volume of hydrogen delivered by it to Union Carbide.

17. The parties recognize that the hydrogen to be supplied hereunder is a by-product of the operation of Linden's Caustic Chlorine Plant. Linden shall not be required to operate its Caustic Chlorine Plant to supply hydrogen hereunder or to produce hydrogen by any other method for the purpose of supplying hydrogen hereunder.

18. On or before the first day of each month Union Carbide will give Linden an estimate of its requirements of hydrogen for each of the following three (3) months. Union Carbide will make reasonable efforts to schedule its purchases of hydrogen in equal monthly quantities. On or before the twentieth (20th) day

of each month Union Carbide will give Linden an order based on Union Carbide's best estimate for the quantity of hydrogen it will purchase during the following month. It is anticipated that Linden's Caustic Chlorine Plant will be shut down for the purpose of rescheduling production approximately four times during the course of each year for a period of approximately 72 hours during each shut-down. Linden will endeavor to keep the number of shut-downs to a minimum and to shorten the time of each shut-down as much as feasible. Linden will give Union Carbide two weeks advance notice of each shut-down.

19. Union Carbide will pay for a minimum of 12,000,000 standard cubic feet of hydrogen during each month of the term hereof whether or not it takes such quantity except where its failure to take 12,000,000 cubic feet in any month is due to the failure of Linden to deliver or such minimum payment is excused under the provisions of this Agreement. It is understood that Union Carbide's obligation to pay for such minimum quantity is in recognition of the obligation of Linden to reserve 50,000,000 standard cubic feet of hydrogen per month for fulfillment of this Agreement.

20. Union Carbide will purchase and take from Linden, and Linden will make available to Union Carbide:

- (a) steam at approximately 90 psig in amounts up to 3,000 pounds per hour,
- (b) fresh water at 60 psig at rates up to 50 GPM, and

(c) brackish water for their fire hydrants at approximately 60 psig at rates up to 200 GPM.

Linden will charge Union Carbide each month its estimated full book cost, including all indirect costs, for producing and delivering steam and fresh water and at the end of each quarter will adjust charges up or down, to its actual costs as certified by the Controller of the Linden Plant of Linden. The additional charge or the credit will be paid by Union Carbide or allowed by Linden at the end of each quarter. Linden will charge Union Carbide for supplying brackish water to two (2) fire hydrants on the Leased Land at the rate charged Linden for such service, not to exceed \$150.00 per hydrant per year.

21. The quantity of steam and fresh water received by Union Carbide will be measured by meters. Either party may inspect the meters for accuracy during normal business hours upon reasonable notice to the other party.

22. Linden will endeavor to furnish steam, fresh water and brackish water to Union Carbide as required but will not be liable for any loss to Union Carbide directly or indirectly attributable to delay in or failure of delivery or for any consequential damages, attributable to any such delay or failure. Union Carbide's obligation to take and pay for the minimum quantity of hydrogen as provided in paragraph 19 will be reduced in proportion to the extent that Union Carbide is unable to take such quantity because of Linden's failure to furnish steam or fresh water.

*intentional?
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23. The term of this Agreement shall commence on written notice from Linden to Union Carbide when Linden begins operation of its Caustic Chlorine Plant at Linden, New Jersey, and shall terminate five (5) years thereafter. Union Carbide may extend the term for two (2) additional five (5)-year periods by giving written notice to Linden not later than six (6) months prior to the end of the term or extension thereof on the same terms and conditions as this Agreement. The price to be paid by Union Carbide for hydrogen purchased hereunder during each of the additional five (5)-year terms, shall be mutually agreed upon.

24. Linden and Union Carbide have heretofore entered into a lease of even date herewith covering the Leased Land. If either the said lease or this Agreement is terminated before the running of the full term thereof for any reason, the other will terminate on the same date. In the event that Linden shall intend to sell the Leased Premises more particularly described in paragraph 1 of the Lease executed simultaneously herewith, Linden shall give Union Carbide written notice of such intent, and if Union Carbide wishes to purchase the Leased Land, it shall so notify Linden in writing within thirty (30) days thereafter and the parties shall negotiate in good faith an acceptable purchase price and payment terms. In the event that this Agreement is terminated before the running of the full term thereof for any reason, Union Carbide may notify Linden within thirty (30) days thereafter that it wishes to continue to lease the Leased Land or to purchase the Leased Land, and the parties shall negotiate in

good faith such continued lease or purchase upon mutually acceptable terms. If the parties are unable to agree to such mutually acceptable terms within sixty (60) days thereafter, the parties shall have no further obligations hereunder. In the event that this Agreement is terminated before the running of the full term thereof for any reason, Union Carbide may within thirty (30) days thereafter, extend the Lease for an additional six (6) month period at the rent and upon the terms and conditions provided therein.

25. Except with respect to the obligations of Linden pursuant to paragraph 10 hereof, Linden does not make and shall not be held liable for any warranty of fitness for a particular use or of merchantability or any other warranty of any kind, express, implied in fact or in law; Union Carbide assumes all risk and liability with respect to its use of the hydrogen either alone or in combination with other products.

26. Neither party is to be liable for delay or failure to perform in whole or part by reason of contingencies beyond its control including but not limited to acts of God, labor troubles, fire, explosion, windstorm, flood, voluntary or involuntary compliance with any government law, order or regulation, or where material covered hereby is not manufactured by Linden, by lack or failure of such supply. If Union Carbide's plant is totally destroyed and Union Carbide elects not to rebuild, Union Carbide will not be relieved of the obligation to take or pay for the

minimum quantity of hydrogen, as provided in paragraph 19 during the year in which the destruction occurred, and this Agreement and the lease shall terminate as of the end of such year. If Union Carbide's plant is partially destroyed, or, if Union Carbide's plant is totally destroyed and Union Carbide elects to rebuild, Union Carbide's obligation to take or pay for the minimum quantity of hydrogen will be suspended for the period of time required to make necessary repairs or to reconstruct its plant, but in no event for a period longer than six (6) months.

27. Union Carbide shall pay, in addition to the price or prices specified in this Agreement, the amount of any tax upon, or payable or collectible by Linden with respect to, or which is ascertained by reference or measured by, any sales, deliveries, or orders of hydrogen hereunder by virtue of any present or future Federal, State, Municipal or other law applicable thereto.

28. Union Carbide shall have the right to terminate this Agreement by twelve (12) months' prior written notice to Linden in the event that Union Carbide determines to cease the business of selling hydrogen in a gaseous state in trailer trucks from Linden, New Jersey.

29. This Agreement constitutes the entire contract between the parties with respect to the subject matter hereof, and no modification thereof shall be effective unless in writing signed by the party claimed to be bound thereby.

30. Any assignment of this Agreement either in whole or in part without the written consent of the other party shall be

void, except to a corporation with or into which either party may be merged or consolidated or in the case of Union Carbide, to a successor to the entire business of its Linde Division.

31. - This contract has been made and executed in the State of New Jersey and shall be construed and interpreted in accordance with the laws of the State of New Jersey.

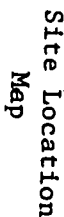
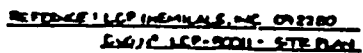
IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written.

LINDEN CHLORINE PRODUCTS INC.

By William C. Clark
Vice President

UNION CARBIDE CORPORATION

By [Signature]
Title Vice President of its Linde Division *CH*



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